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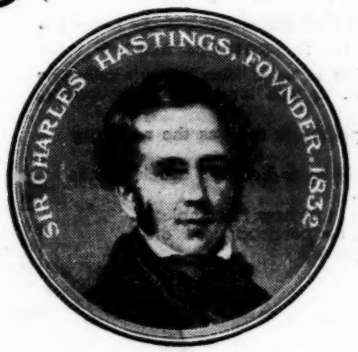

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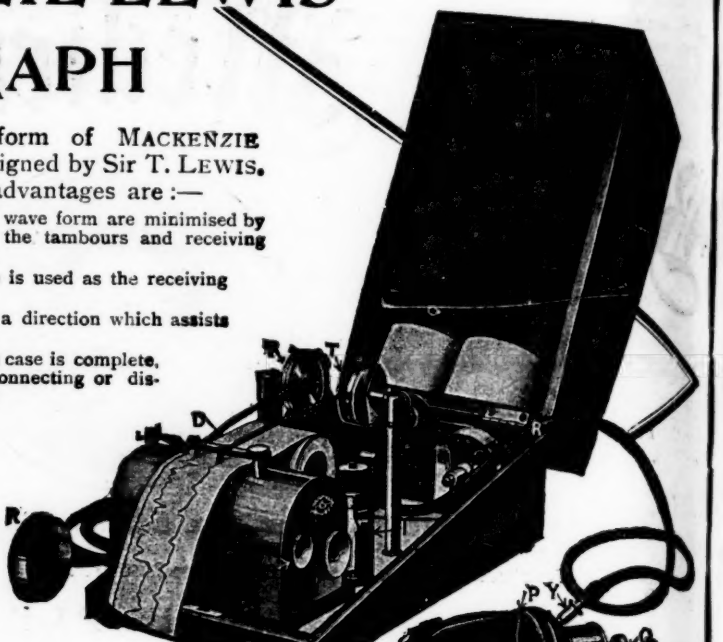

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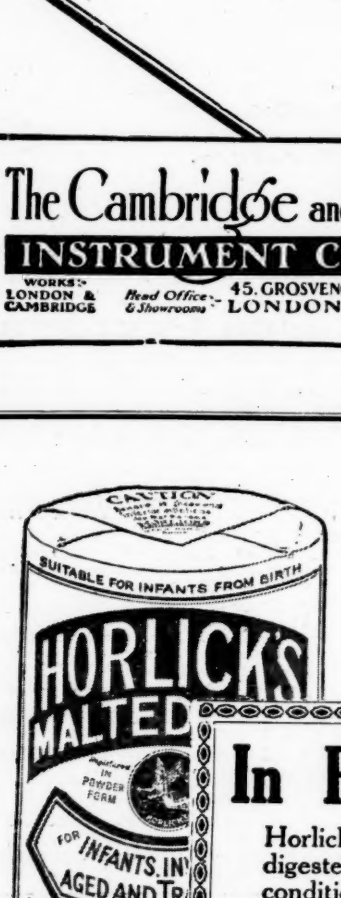

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ON

CONGENITAL HYPERTROPHY OF THE PYLORUS.*

BY

GEORGE F. STILL, M.A., M.D.CANTAB., F.R.C.P.LOND.,

PHYSICIAN TO THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET; PROFESSOR OF DISEASES OF CHILDREN, KING'S COLLEGE HOSPITAL.

So much has been written in the last few years on congenital hypertrophy of the pylorus that one is almost inclined to apologize for broaching the subject again. It seems, however, worth while to sum up the results of one's experience when that experience is perhaps unusually large and extends far enough back to give some sort of perspective of progress in respect of the particular disorder, especially as to treatment.

In the past twenty-four years I have had under my own observation, either in my wards at hospital or in private practice, 248 cases of congenital hypertrophy of the pylorus. These figures must not be taken as indicating that the condition is of frequent occurrence. On the contrary, it is so uncommon that many practitioners of large experience tell me they have never seen a case. In the past, no doubt, congenital hypertrophy of the pylorus must often have run its course unrecognized, labelled perhaps "marasmus" or "chronic gastric catarrh"; but time has changed all this, and whereas in former years a case seen in consultation had almost invariably been undiagnosed, now the condition has almost always been suspected, if not recognized.

In outline the picture is now very generally known, thanks largely to the writings of Dr. John Thomson of Edinburgh. An infant three or four weeks old who has hitherto shown no tendency to vomit, or perhaps has posseted a mouthful or two, begins to vomit occasionally. The vomiting is not necessarily very frequent, perhaps only twice in the twenty-four hours, but the vomit is large and evidently consists of more than the last feed; moreover, it comes up with such force that it comes through nostrils as well as mouth. At the same time the bowels, which have been working with more or less regularity, become constipated, and the weight, which has been rising satisfactorily, ceases to increase and very soon begins to fall. In some cases it is this wasting rather than the vomiting which has aroused the mother's anxiety. On examination of the abdomen there is seen peristalsis of the stomach and the characteristic thickening of the pylorus is to be felt.

I shall proceed to consider this affection in detail, basing my remarks on my series of 248 cases. Unfortunately I find that in my notes I have sometimes omitted to record particular points, so that my figures will not on all points include the whole series.

This is one of the diseases in which sex incidence is as remarkable as it is difficult to interpret. Of 247 cases only 37 were girls, 210 were boys.

Place in family is much less definitely a predisposing factor than sex. In 114 cases out of 230 in which I have noted this point the infant was the first-born child; so that the proportion of first-born is about 50 per cent. I would point out that the proportion of first-born affected does not necessarily correspond to the liability of the first-born. In my opinion there is a special liability of the first-born to this, as also to other congenital abnormalities, but it is difficult to give any conclusive evidence of this, especially in these days when in many families there is only one child or two, so that the chance is considerable that a large proportion of persons showing any condition will be first-born.

In speaking of congenital hypertrophy of the pylorus as a congenital abnormality I do not mean to imply that the hypertrophy, or even the spasm that leads to hypertrophy, dates from birth; it is conceivable that it may do so, although the symptoms do not appear until the infant is about 2 to 4 weeks old. What is congenital is apparently some lack of stability, if I may put it so, in the harmony of gastric and pyloric relaxation and contraction, so that the child starts life with a machine which, although able to work passably well for a few weeks, is certain soon to get out of order. In this sense, at any rate, the disorder is congenital, and, like other congenital abnormalities, it is sometimes repeated in the same family. Amongst my 248 cases there were four instances of two cases of this affection occurring in the same family.

The age at which the first symptom appears—and for this purpose I have regarded vomiting as the first symptom—will be seen from the following table of 195 cases in which this point was noted:

Week of onset.	No. of cases.	Week of onset.	No. of cases.
1st	30	6th	6
2nd	38	7th	1
3rd	57	8th	7
4th	35	9th	1
5th	19	12th	1

SYMPTOMS AND DIAGNOSIS.

I propose now to consider the symptoms in detail with special reference to diagnosis.

Vomiting, constipation, and wasting: this is the combination which in any infant under 3 months of age should always suggest the possibility of congenital hypertrophy of the pylorus. The association of constipation with vomiting at any period of childhood should make one suspicious of serious organic disease, such as meningitis or some form of intestinal obstruction, and early infancy is no exception to this rule. The vomiting of digestive disturbance is likely to be associated with looseness of bowels rather than with constipation: there is also usually with it some abnormal appearance of the stools, whereas with congenital hypertrophy of the pylorus there is marked constipation and the stools are usually otherwise normal. The constipation is no doubt due to the smallness of the quantity of food which passes through the pylorus into the bowel, and the gradual disappearance of the constipation is one of the indications of lessening of the pyloric obstruction in cases which are treated by lavage of the stomach.

The vomiting varies remarkably in its frequency. There are cases, and I think the commoner, in which the vomiting is almost insidious in its onset, occurring at first perhaps only once or twice in twenty-four hours. The baby has posseted from time to time, and it was thought that this was due either to flatulence or to some indigestion; then a larger and more forcible vomit began to occur once or twice in the day, but there was no date to which the beginning of the trouble could be definitely referred. There are other cases in which upon a particular day the infant begins to vomit, never having vomited before, and the vomiting occurs after nearly every meal, so that hardly any food is retained. Naturally in the latter class of case the loss of weight is much more rapid than in the less acute cases. I have known such to lose weight at the rate of several ounces a day, whereas in the more common type, with vomiting perhaps twice daily, a loss of 5 or 6 oz. a week is more likely.

The character of the vomited material is worth observing, for it may give some clue to the state of the stomach. In the early stage it usually consists only of food, but as time goes on there is more and more tendency to vomiting of much glairy mucus, evidently pointing to a catarrhal condition of the mucous membrane, and this is often associated with considerable dilatation of the stomach; the stagnation of food not only distends the stomach but sets up a catarrhal condition of the mucosa, and sometimes brown shreds or even red clots of blood appear in the vomit. Occasionally, in spite of the situation of the obstruction in these infants, bilious material has appeared in the vomit. This is rare, but is of interest as showing that the closure of the pylorus is not continuous. If any proof were needed that the pyloric obstruction is intermittent, and is therefore due at least in part to spasm of the pylorus, it would be afforded by cases, not very rare in my experience, in which infants with peristalsis and tumour, proved subsequently by operation to be due to hypertrophy of the pylorus, have had intervals of two or three days, sometimes even as long as five days, when the vomiting has temporarily ceased entirely and food passes through the pylorus normally. I mention this not only because it throws light on the character of the obstruction, but also because it has sometimes raised doubts as to diagnosis, both in the parents' and in the doctor's minds, when the spasmodic nature of the obstruction has not been fully realized.

In this connexion also I would mention another feature which is usual in this disorder, though not peculiar to it—that each change of food is apt to be followed by lessening or cessation of the vomiting for twenty-four to forty-eight hours, after which the vomiting becomes as troublesome as

* Delivered before the West Dorset Branch of the British Medical Association, November 25th, 1922.

before. This repeated temporary improvement is another source of error in diagnosis. A condition apparently so responsive to change of diet is thought to be simply a digestive trouble, and it is concluded that if only the right food could be found the trouble would disappear. So one finds that often food after food has been tried and the infant has gradually lost weight and strength before the possibility of pyloric obstruction is realized.

Now the diagnosis of congenital hypertrophy of the pylorus, unlike the diagnosis of many other disorders and diseases, is not a matter of opinion; it is demonstrable, and its demonstration consists in seeing waves of peristalsis in the hypertrophied and dilated stomach, and in feeling the hard and thickened pylorus. Visible peristalsis of the stomach in an infant is not necessarily an indication of any obstructive condition; its significance depends upon the degree of the peristalsis. Without organic disease of any sort a slight wave of peristalsis is sometimes to be seen in a thin infant towards the end of a meal, and I have thought this was specially noticeable in infants who were much subject to vomiting, apart from organic disease of any sort, but the waves are much less marked than those seen in congenital hypertrophy of the pylorus. Even the large wave which is such a striking feature of pyloric hypertrophy, the rounded bulging, varying in size from half a walnut up to half a Tangerine orange, and emerging from under the left costal margin to pass slowly across the epigastrium, separated by a depression from the succeeding wave, and this by yet another depression from another wave, is not necessarily pathognomonic of congenital hypertrophy of the pylorus. Exactly similar peristalsis has occurred in cases of stenosis of the duodenum, and I have seen one case in which such peristalsis occurred with complete obliteration of the duodenum. These duodenal cases are much rarer than pyloric obstruction.

Peristalsis of the stomach is certainly not in itself proof of congenital hypertrophy of the pylorus, though it may be admitted that when the peristaltic waves are large this is by far the most probable explanation.

The only absolute proof of pyloric hypertrophy, short of opening the abdomen and seeing it, is to feel the tumour. The pylorus in these cases is to be felt as a small barrel-shaped hard tumour, which, as palpated through the abdominal wall, gives the impression of varying in size from the thickness of an ordinary lead pencil up to that of a hazel nut. Its position is usually about 1 to 1½ inches above the level of the umbilicus, close to the right side of the vertebral column, so that it is usually necessary to press slightly inwards and very deeply under the right rectus muscle towards the vertebral column. The characteristic feature of the tumour is its disappearance, so far as palpability is concerned, when the pylorus is relaxed, so that, like an intussusception, the tumour may be quite obvious at one moment and a minute or so later it may not be felt. This variability in the hardness of the tumour is important in diagnosis, for it may be necessary to distinguish between hard scybala and the tumour due to hypertrophy of the pylorus. The contraction and hardening of the pylorus may be stimulated, when its position has been located, by gently kneading with the finger, which often helps considerably in demonstrating the tumour. How often is this tumour to be detected? Twice only in my 248 cases have I failed to feel it definitely, and one of these was moribund, so that examination could not be very thorough. Allowing for such rare failures, I think one would be right in saying that the tumour is to be felt in all cases, if sought in the proper way. The characteristic tumour makes the diagnosis certain, and in such a serious condition, if certainty is attainable, we have no right to be satisfied with anything less than certainty; for our diagnosis may involve an extremely grave operation. And yet I find that it is only seldom in cases seen in consultation that the tumour has already been felt.

In the first place, let it be recognized that, whilst in some cases the tumour is found at once and with ease, there are others in which it is only to be found by painstaking and prolonged searching. I have sometimes had to see an infant twice, or even three times, before I could be certain of the tumour.

If a casual poking of the finger-tips into the abdomen is expected to discover the tumour the result will usually be failure; one must be prepared to sit down before the infant, have a feed given, and patiently palpate the abdomen, it may be, for ten or fifteen minutes before the tumour is detected, and even then, if the movements of the stomach happen to be sluggish, one may fail to find the tumour until more brisk peristalsis occurs.

It is always advisable to have the infant fed during the examination, and this for three reasons:

1. The abdomen becomes relaxed, so that deep palpation is easy.
2. During the progress of the feed peristalsis of the stomach begins, and it is at this time that the pylorus is most likely to be felt.
3. If a full feed is given the pylorus is displaced somewhat downwards and to the right, so that it is more easily reached.

The cases in which the pyloric tumour is most difficult to detect are those in which the pylorus is, so to speak, tucked up high in the liver, and it is in such cases particularly that the giving of a large feed may assist detection of the tumour.

Prognosis and Treatment.

In 232 of my cases I have a record of the results (in 16 the notes were defective and the result not recorded); there was recovery in 156, death in 76. Of the fatal cases, 7 were in such an extreme condition of exhaustion when seen that either no treatment was possible or, at most, lavage was only just begun, and the child died within a week or less, several within twenty-four or forty-eight hours. These I shall omit from consideration, as they hardly affect the question of prognosis or treatment, except to emphasize the importance of early diagnosis. One may say, therefore, that 225 cases are available for considering the effect of treatment, and of these 156 recovered, 69 died. These figures, it must be remembered, cover a period of twenty-four years, and therefore include cases seen at a time when treatment was more tentative than it is now, and when surgery was invoked rather as a last and desperate resource than as an early and deliberate choice, which it usually is to-day. There is another point which must be considered if prognosis is to be based on statistics—namely, whether the figures are from cases treated in hospital or from cases treated in private, that is, in nursing homes or in the patient's own home. My own experience—and on this point I believe the experience of others has been the same—is that hospital results in this disorder are, for some reason difficult to ascertain, much less satisfactory than private results, and this holds good whatever method of treatment is adopted. If the figures given above are divided into these two categories the difference is evident:

	Recoveries.	Deaths.
Private cases	... 113	14
Hospital cases	... 43	55

No single cause seems sufficient to account for these differences; great efforts are made to obtain at least as good results in hospital as in private practice, and to some extent hospital results have improved in recent years. One factor which applies rather to my earlier cases than to those in recent years was the use of wet nurses, which certainly saved several of my private cases after operation; this has rarely been practicable in hospital. Anyone who is familiar with the treatment of infantile disorders in hospitals knows how often infants do badly with any condition, especially with any gastric or intestinal disorder, amongst a number of other ill children; they are specially apt to develop diarrhœa, and go down with symptoms suggestive of gastro-enteritis. Infants do best segregated as much as possible. This has, I think, something to do with the poor results in the hospital treatment of these pyloric cases. Whatever the explanation may be this difference has to be borne in mind in prognosis.

I pass now to the consideration of particular methods of treatment. Twenty years ago recovery by operation was regarded as a notable triumph of surgery, but since that time surgical technique has made such strides that recovery is now a commonplace; indeed, there is a tendency to lose sight of the fact that complete recovery can take place without operation at all. So far from operation being essential in all cases, there are some in which without special treatment of any kind beyond painstaking and efficient regulation of the feeding, generally in the direction of reducing the food to small quantities at short intervals, the tumour and peristalsis have gradually disappeared, and after many weeks or months of hovering on the verge of collapse the infant has completely recovered. Amongst my 156 recoveries there were six which were treated in this way,

and one in which after lavage had been perseveringly tried without success, the infant eventually recovered with prolonged care in feeding. Similar cases have been published by other observers. I mention this mode of treatment only as showing that the hypertrophy and obstruction can pass away spontaneously, but the chance of recovery by such treatment is probably extremely small. It must be remembered that a large proportion of the cases which have been eventually treated by other methods have been treated at first, and sometimes for several weeks, by dieting, and it is the failure of such treatment which has led to other methods being used.

Another line of treatment which has had so many successes that in former years it seemed only right to try it in all cases in the hope of avoiding what at that time was the much graver risk of operation, is stomach washing—lavage. Of 78 cases treated only by lavage 43 recovered, 35 died. It is only right to add that in former years I adopted this treatment always before resort to operation, so that these figures represent only those in which the result of lavage seemed sufficiently promising to justify continuance of it, a practice which eventually failed in some cases, as my figures show. But there are many others in which after lavage had been tried for some days or weeks the result, though sometimes a definite improvement, was not thought sufficiently good to justify postponing operation, so that my operation cases include many in which lavage had previously been done without effecting a cure.

Lavage, apart from its uncertainty of ultimate result, has drawbacks. Not all babies tolerate lavage; there are those who become so collapsed and exhausted by it that the lavage has to be abandoned. When it has been long continued I have known it to cause gastric irritation, so that the washing came back blood-stained and lavage had to be diminished or stopped. At the best it is only after many weeks of daily lavage, usually twice daily for a time and then once daily, that the condition is cured. I have generally reckoned twelve to sixteen weeks as the usual period during which lavage is necessary in cases which are cured by it. The gradual disappearance of the peristalsis and tumour under this treatment is very instructive as to the spasmodic origin of the hypertrophy. The vomiting ceases gradually, and is usually entirely stopped some weeks before the peristalsis and tumour have disappeared. The long duration of this treatment, the failure at first to gain weight, and then, after a week or two, the slow and unsteady gaining, make a trying ordeal for the parents, and the daily lavage necessitates either a specially trained nurse or a large amount of medical attendance, which is sometimes a practical difficulty.

With all its drawbacks, however, lavage has had sufficient successes, as my figures show, to justify its retention as a method of treatment which may be the best one to adopt in particular cases. Where the weight is only slowly falling and it is evident that a considerable amount of food passes through the pylorus, it may be right to try lavage and judge by daily weighing whether operation can still be postponed; but if the weight continues to fall, even for a few days, lavage should be abandoned. In cases where lavage succeeds the weight commonly ceases to fall, but does not rise during the first few days, perhaps not for a week or ten days, and then it begins slowly to rise. (I assume that the feeding is carefully regulated.)

In the decision as to whether operation or lavage should be the first line of treatment the possibility of obtaining surgery specially experienced in this disorder must weigh greatly. It makes a very great difference if the services of some surgeon who has operated upon many of these cases of congenital hypertrophy of the pylorus are available. Another point, and one of first-rate importance in the decision as to treatment, is the possibility of retaining the mother's milk. If the mother is still suckling the prolonged anxiety and the disturbances of suckling which are likely to be entailed by the lavage treatment will almost certainly end in loss of the breast milk, and this undoubtedly diminishes the prospect of success if operation becomes a necessity. My own feeling, therefore, is that when the mother is breast-feeding her infant it is usually the wisest course to proceed at once to operation, so that only with an interruption of forty-eight hours to allow for recovery from the immediate disturbance of operation the infant may continue the breast milk. Usually after a few hours' feeding with some watery solution such as glucose, and then a few more hours' feeding with milk pumped from the breast, the infant can within two or three days return to breast-feeding.

But if it is decided to operate there is still the question of method, and on this point the physician can only speak from his experience of results. Various operations have been tried; some have been abandoned by common consent. Pylorectomy, pyloroplasty, gastro-enterostomy are now things of the past so far as congenital hypertrophy of the pylorus is concerned. In two of my cases years ago gastro-enterostomy was done; both recovered, but in all the rest of the 139 cases in which operative treatment was adopted either forcible dilatation of the pylorus—that is, a modified Loreta operation—or in the last five years the Rammstedt operation, was done. The results of the various modes of treatment are perhaps best seen in the tabulated summary.

Results of Various Methods of Treatment of Congenital Hypertrophy of the Pylorus.

Method of Treatment.	Private Cases.		Hospital Cases.	
	Recovery.	Death.	Recovery.	Death.
Simple feeding	5	0	2	1
Lavage	24	6	19	29
Gastro-enterostomy ...	2	0	—	—
Forcible dilatation ...	74	6	12	16
Rammstedt	8	2	10	9

Anyone who has seen the Rammstedt operation—that is, a longitudinal incision through the peritoneal coat and muscular layers of the pylorus, leaving the mucosa intact—can hardly fail to have been impressed with its simplicity and rapidity, and it has already become the generally approved operation for congenital hypertrophy of the pylorus. But, as my figures show, it is by no means free from danger. The deaths from the Rammstedt operation in my fatal cases have, I think, all been within a few days afterwards; sometimes from bleeding from the pyloric incision into the peritoneal cavity, sometimes from shock, sometimes from collapse within two or three days, but always (except in one case where the child died when the recurrence of symptoms necessitated a second operation) as a direct result of the operation. So that although it offers great advantages and is no doubt the operation which most surgeons will adopt, it has a considerable mortality, and at present I have but seldom had it done in my private cases. Indeed, the results of forcible dilatation have been so good, especially in recent years, that it is hardly likely better could be obtained.

The operation of forcible dilatation has been done in nearly all my cases by Mr. F. F. Burghard, and the proportion of recoveries in the private cases hardly does justice to his recent results. These in the past few years show a much higher proportion of successes. In the past eight years Mr. Burghard has performed this operation on forty-six of my private cases, with only one death. It is clear that this operation, as done by him, has given results at least as good as those obtained by the Rammstedt operation. But this no doubt depends very largely on the particular operator and cannot be taken as proving that the operation itself is as good as, or better than, the Rammstedt method; indeed, in the hands of some surgeons it has had very little success. The hospital mortality of these forcible dilatation cases has, in my experience, been much less often due directly to the operation than is the mortality of the Rammstedt procedure; death has occurred more often after many days or weeks from gastro-intestinal disturbance or marasmus.

By whatever treatment recovery is obtained the recovery seems to be complete. It is true that recurrence has taken place both with Rammstedt operation and with the forcible dilatation, but this happens within ten days after the operation; it occurred three times amongst my earlier cases treated by dilatation, necessitating a further dilatation, which in each case was followed by recovery. It happened once also amongst those treated by the Rammstedt method, but in this case a second operation by the same method proved fatal. With increased experience of the degree of stretching needed in the one case and of the length of the incision needed in the other, recurrence is now hardly to be feared.

I have seen or heard of many of my cases years afterwards. The hypertrophy of the pylorus, whether treated by simple feeding, lavage, or operation, has seemed to leave no after-effect; they have been as a rule particularly healthy and fine children.

TEN CASES OF OVARIOTOMY IN WOMEN OVER 70 YEARS OF AGE.

BY

HERBERT R. SPENCER, M.D., B.S., F.R.C.P.,

OBSTETRIC PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

OVARIOTOMY on women over 70 years of age is so uncommon as to justify the publication of a complete series of cases. The advanced age of the patients introduces pathological, clinical, and therapeutical features which are worthy of consideration.

The following ten cases have been met with amongst 625 ovariotomies I have performed.

CASE I.

M. A. F., aged 82½ years. This case was published in the BRITISH MEDICAL JOURNAL in 1893 (ii, 1271). The patient was, so far as I know, the oldest upon whom ovariotomy had been performed up to that time, except Homans's patient, who was apparently a few weeks older. The tumour was a multilocular cyst of the size and shape of a cottage loaf. There was some mental wandering, bronchitis, and loss of control of faeces and urine during convalescence; but a good recovery ensued and the patient was in excellent health eleven months later. The patient's mother died at the age of 76, two sisters at 70, and one was still living at the age of 79.

CASE II.

E. F., a widow aged 71, who had had fifteen children, two miscarriages, was admitted to University College Hospital on May 10th, 1898, complaining of enlargement of the abdomen and prolapse of the womb for four years, and of a dirty vaginal discharge, sometimes tinged with blood, which had been present for some months. For six months she had had difficulty and frequency in passing water; sometimes there was an aching pain in the lower abdomen and back; the bowels were confined.

Menstruation began at 17, was regular, not excessive, and lasted for three or four days; it ceased at 50.

The patient's father and mother died at the age of 78.

The abdomen was greatly distended, the half-girth being 22½ inches on each side, while the measurement from ensiform cartilage to pubes was 20½ inches. A large, evidently multilocular, ovarian tumour distended the abdomen. The vagina was inverted and had a large ulcer on it. The os was healthy. Under treatment by boric acid douches the ulcer gradually healed by July 1st.

On July 11th, 1898, ovariotomy was performed. Ventro-fixation was also performed by means of the ligature on the right pedicle, and a second silk ligature passed under the left round ligament, tying the left side of the uterus to the abdominal wall; this ligature was removed on the seventh day. The abdominal incision was closed with silkworm gut passed through the abdominal wall, buried silk for the fascia, and horsehair for the skin. The operation lasted thirty-four minutes.

The tumour was a multilocular ovarian cyst without papilloma or solid growth, and contained 15½ pints of fluid. There was very little shock after the operation; a little sickness occurred at 5 p.m. and 11 p.m. The patient slept a good deal in the evening, was comfortable except for a slight pain in the back, and passed urine spontaneously. Some pain next day was due to pressure of a too tight bandage, and was at once relieved on relaxing the bandage. Flatus was passed on the second day.

The recovery was simple, the temperature only once reaching 100° after the operation. The wound healed by first intention, and the patient left the hospital on August 13th. Seen on October 25th the scar was sound, but there was still procidentia of the vagina and cervix. For a few days after the operation the patient was rather sullen, at a time when she slept badly; but later her spirits became normal.

CASE III.

L. B., a married woman aged 70, who had had two children naturally, was admitted to University College Hospital on May 19th, 1908, complaining of a tumour in the abdomen which she had noticed for six months, increasing in size and accompanied by pain in the lower part of the back; she also had pain on passing a motion except when the bowels were relaxed with medicine. Menstruation had always been regular.

The patient was rather feeble. The abdomen was irregularly distended, chiefly below the umbilicus and on the right side by a cystic tumour which reached up to within one inch of the umbilicus and projected into Douglas's pouch, displacing the small atrophied uterus slightly forwards and to the left. The tumour fluctuated and was evidently a multilocular ovarian cyst.

Ovariotomy was performed on May 25th, the pedicle being tied with silk and the surface of the stump turned in and stitched over with fine silk. The abdominal wall was closed with through-and-through stitches of silkworm gut and buried continuous silk for the peritoneum and sheath of rectus. The operation lasted fourteen minutes. There was no abdominal discomfort or shock, and very little vomiting afterwards. The wound united by first intention.

The temperature rose daily to 100° for the first five days, and in the second week on two occasions reached 101.2°; but after the sixteenth day it did not rise above 99.5° and was normal when she was discharged well on June 30th.

The tumour was a multilocular cyst of the left ovary with no solid growth or papilloma; it weighed 2 lb. 7½ oz. The right ovary was normal and was not removed. No cause for the rise of temperature was discovered; there were no râles in the chest, and no pain or mental disturbance.

CASE IV.

Mrs. B., aged 74 (two children, no miscarriage), was seen by me at New Barnet, in consultation with Dr. Elam, in May, 1914. She had lost a good deal at the menstrual periods, which ceased at the age of 50. At the age of 71 she had a grave attack of hemiplegia, for which Sir Thomas Barlow saw her in consultation. For nearly a year it was thought she would not recover. She gradually got about, but had since suffered from phlebitis in the veins of the arms and legs. Early in 1914 she began to complain of pain in the lower abdomen and of difficulty in micturition and defaecation. A tumour was discovered reaching up nearly to the umbilicus, most marked on the left side. It was fixed, was diagnosed as an adherent ovarian tumour, and was removed (at the patient's house) with some difficulty, on account of the strong adhesions, on May 4th, 1914. In cutting the tumour free the bladder was opened for about two inches and the hole was closed with silk sutures, not involving the mucous membrane. A drainage tube was inserted. The wound healed by first intention, except the track of the drainage tube, which closed quickly by granulation. There was no trouble after the operation.

The tumour was a multilocular ovarian cyst, with no solid growth or papilloma, the cyst having the usual columnar epithelial lining.

The patient remained well for more than six years after the operation, but died of haematemesis, thought to be due to gastric ulcer, when over 80 years of age, on October 15th, 1920.

CASE V.

C. G., a virgin aged 71, was sent to me by Dr. Goullet on February 17th, 1916, complaining of swelling of the abdomen and aching pain for the past six months. Menstruation had ceased at 50. It had not been very regular at first, but became more so later on, and was always attended with a good deal of pain. The patient had lately suffered on most days from vomiting. On six occasions she had had to have a catheter passed for retention of urine. The bowels were confined. She had really had pretty good health; but when a young woman, having a "displacement" of the womb, she was kept in a recumbent position for twenty years, always being carried if she left her room; she suffered much from sickness during this time. The legs were not swollen and she had been getting thinner. A slight cough sometimes troubled her, but there was no expectoration. The tumour had been discovered by the doctor a fortnight before I saw her.

The abdomen was greatly distended by a multilocular ovarian tumour considerably larger than a uterus at term. The uterus was small and freely movable, and the lower end of the tumour could be felt in front of the body and movable apart from it.

A multilocular ovarian tumour of the left side which contained neither new growth nor papilloma was removed in a nursing home on February 20th, 1916. The right ovary, atrophied, was not removed. The patient made a simple recovery. The wound healed by first intention. She was in fairly good health in February, 1923, seven years after the operation. A sister is living at the age of 86.

CASE VI.

C. D., aged 70½ years (four children, no miscarriage), was admitted to University College Hospital on July 18th, 1918. Her last child was born thirty years ago. She complained of being suddenly seized with pain in the abdomen when out walking recently. A doctor whom she consulted found an abdominal tumour, which had greatly increased in size during the last month.

Menstruation began at 17 and ceased at 54. It had been regular every four weeks, lasting seven days, unaccompanied by pain. The flow was rather free, fifteen diapers being used; micturition was frequent; the bowels regular. The patient had lost a good deal of flesh lately.

On examination an abdominal (evidently multilocular ovarian) tumour, as big as the uterus at term, reached up to the ensiform cartilage. The uterus was atrophied and movable. Behind and to the left side was a hard tumour, as big as a hen's egg, which appeared to be an ovarian fibroid. The large abdominal tumour could not be felt per vaginam. The case was diagnosed as an ovarian fibroid on the left side and a multilocular ovarian cyst on the right.

The large tumour was found to affect the *left* ovary when removed on July 20th, 1918, through a four-inch median abdominal incision; on tapping this cyst about a gallon of straw-coloured fluid escaped. The pedicle was tied and stitched over with silk. A small cyst was found in the right ovary, which was also removed. The hard tumour proved to be a subperitoneal calcified fibroid of the uterus and was not removed. The abdominal wound was closed with through-and-through stitches of silkworm gut, continuous silk for the peritoneum, interrupted silk for the sheath of the rectus, and silkworm gut for the skin.

The patient was a little sick after the operation and required the use of the catheter. She made an uninterrupted recovery, and left the hospital on August 12th, 1918.

The tumour was a multilocular cyst, quite smooth on the outer surface and free from adhesions, and showed a few dilated lymphatics; an accessory ostium was present in the Fallopian tube. The inner surface was irregular and covered in places with pigment and thin patches of papilloma up to the size of a sixpence, and in a few places with little solid white growths not bigger than a grain of wheat or a pin's head. There was no extensive mass of papilloma and no other solid growth. The right ovary measured

4 by 1/2 by 1/4 in. and had two or three small cysts in it free from papilloma.

Under the microscope the wall of the large cyst was fibrous and had undergone hyaline degeneration. The papillomata were covered with a single layer of cubical or short columnar epithelium; the stroma of the thicker papillomata was oedematous and in some places cystic.

I examined the patient on January 23rd, 1923, when she was in excellent health and spirits, with every indication of keeping up the family tradition for longevity. Her parents had lived to over 80, and her grandfather died in his hundredth year.

CASE VII.

I. E., aged 71, was admitted to University College Hospital on December 16th, 1918. She had had two children, no miscarriage. She had been married twice. Her first child died of croup at three months of age; the second was alive and well, aged 41.

Three months previously she noticed a lump in her abdomen, which at first gave her much pain and had increased in size. The pain was now not so severe, being characterized by soreness and aching. She had suffered from a large left inguinal hernia for forty years.

Menstruation began at 12, was regular every twenty-eight days, lasting six days; it ceased at 50. There was no trouble with defaecation or micturition, and no vaginal discharge. Her father died at 74 of "old age"; her mother at 76 of bronchitis; one brother (aged 74) and two sisters were alive and well.

On admission the skin was very dry and the feet cyanosed; the patient was in good general condition. There was a left inguinal hernia nearly as large as a fist, and a very large tumour reaching up into the left hypochondrium, evidently a multilocular ovarian tumour.

Ovariotomy was performed on December 21st, 1918, one large cyst being tapped. The pedicle (left) was tied with silk. The omentum was found to be adherent to the margin of the inguinal sac, which was also occupied by omentum; this was withdrawn, the omentum severed after tying with silk, the opening of the sac, which admitted a forefinger, closed with a silk purse-string suture, and the stump of the adherent omentum tucked over the closed canal. The abdomen was closed with through-and-through stitches of silkworm gut, fine silk (continuous for the peritoneum and interrupted for the fascia), and silkworm gut for the skin. The operation lasted fifty-three minutes and was borne well.

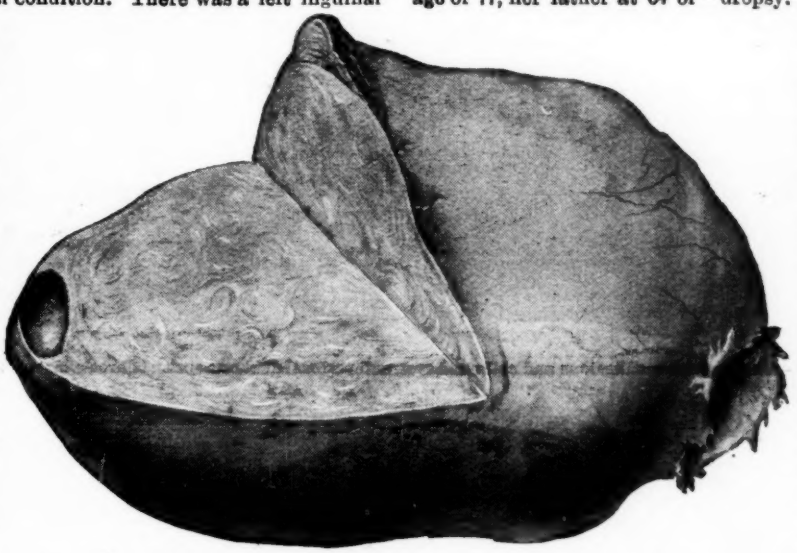

FIG. 1 (Case IX).—Sector showing remains of ovary and smooth-walled cyst; to right the ruptured cyst. (Three-fifths natural size.)

The tumour was a multilocular cyst with no solid growth or papilloma.

The patient had no trouble after the operation; the wound healed by first intention. The highest temperature was 100.2°, on the second day, and 99.8° after removal of the deep stitches on the eighth day. She left the hospital in excellent health on January 24th, 1919. The inguinal region was normal and free from pain, the abdominal scar sound. The patient was in good health in January, 1923.

CASE VIII.

L. A., a widow, aged 70 (eleven children, no miscarriage), was admitted to University College Hospital on May 2nd, 1919, complaining of an abdominal tumour which she had noticed for four years, and which had grown very rapidly since four months ago, when an attack of pleurisy confined her to bed for five weeks. Menstruation ceased at the age of 48. Her parents had both died at the age of 85.

On admission the patient was fairly strong, and had a considerable amount of dark grey hair. There was a small tumour at the umbilicus (thought to be probably an omental hernia, but actually a small fatty tumour). The abdomen was distended by a tumour reaching up to the costal margin on the right side, and to an inch below the costal margin on the left side. Below and on the left side it was clearly fluctuating; on the right side it was very firm. It was evidently a multilocular ovarian tumour. A large rectocele was present. The cervix was high up, the uterus small and retroverted; the lower end of the abdominal tumour could be felt indistinctly in front. The tumour was removed on May 8th, 1919, through a median incision, which was bifurcated so as to encircle the umbilical tumour. There were no adhesions. The main cyst was tapped and several pints of straw-coloured fluid were evacuated. The tumour was then withdrawn from the abdomen, and the pedicle tied with silk and stitched over with fine silk. The abdominal wound was closed with through-and-through stitches of silkworm gut, silk for the peritoneum and fascia, and silkworm gut for the skin. The operation lasted twenty-eight minutes. The left ovary, small and atrophic, was not removed. The patient made a simple recovery. The temperature reached 99.2° on the second day, 99.8° on the third day, 99.2° on the fourth day, and then did not rise above 99° till the tenth day. On the eleventh day it rose to 100.2°, the highest point reached, and gradually fell to normal on the twentieth day.

The wound healed by first intention; the spirits of the patient remained good throughout. She got up on May 29th, and left the hospital quite well on May 31st, 1919; she was in fairly good health when seen on January 17th, 1923.

The tumour was a multilocular cyst of the right ovary consisting of a large cyst measuring 12 inches in diameter, and a series of small secondary loculi containing inspissated yellowish-white mucus. There were no papillary growths or solid growth in the tumour. A microscopic section of the smaller cysts showed them to be lined with a single layer of columnar epithelium which was thrown into a number of papillary processes mostly simple, in some places branched.

CASE IX.

E. S., aged 70 and two months, was admitted to University College Hospital on June 29th, 1921, complaining of a lump in the lower abdomen which she first noticed four months previously. At first the lump gave rise to no pain, but lately there had been aching in the abdomen. There had been slight bleeding from the bowel at about weekly intervals. There was no vaginal discharge. The patient had had seven children and three miscarriages. The menopause occurred at 45.

The patient has a sister living aged 75. Her mother died at the age of 77, her father at 64 of "dropsy." A sister died at the age of 24 of consumption. There was no history of tumour in the family.

The patient was well preserved for her age, healthy and cheerful. The abdomen was distended and contained a moderate quantity of free fluid. A hard, freely movable tumour could be felt in the lower abdomen lying with its long axis transverse. It could be raised up out of the pelvis, but owing to rigidity and tenderness it was impossible to make out its pelvic attachment. The vagina was senile and was narrowed by bands at its upper part. The cervix was atrophied; the body could not be felt, but the tumour did not appear to be attached to the uterus.

The case was diagnosed as an ovarian fibroid with hydroperitoneum. This was confirmed at the operation on July 2nd, 1921. The tumour weighed 2 lb. 10 oz. and affected the left ovary. The left tube was not removed and was used to cover in the stump of the pedicle. The wound healed by first intention, the highest temperature being 99.6°, on the second day.

On the tenth day a small patch of skin under the upper through-and-through stitch (tied over gauze), which had been a little discoloured, showed signs of sloughing. The wound itself remained healed and the surface left by the separation of the skin slough had cicatrized by August 5th. This is the only occasion on which I have seen this occurrence, which was probably due to the stitch having been tied a little too tight. The patient left the hospital quite well on August 5th, 1921.

The tumour was an ovarian fibroid showing two cavities due to degeneration (Fig. 1). One of them, as large as a duck's egg, had ruptured and given rise to free fluid in the abdomen. Microscopic examination showed the tumour to be a very cellular fibromyoma, oedematous in places.

CASE X.

S. S., aged 71 (born on April 25th, 1851), had been married at the age of 21 and lived a married life for thirty-three years, but had never been pregnant. Her father died at 70 in a fit, her mother at 80 from old age. She had had two brothers and seven sisters, two of whom had died of cancer of the breast, and one of cancer "inside."

She was emaciated and very ill when admitted to University College Hospital on October 5th, 1922. She complained of falling of the womb since the previous January, of great frequency of micturition (every ten minutes by day and every hour at night), also of great pain during the act. The abdomen had been swelling lately and there was great pain and tenderness over it. The patient was sick nearly every day and the legs were oedematous. Menstruation began at 17, was regular, slight in amount, and lasted seven days with much pain. The menopause occurred at the age of 40.

On admission the patient was bright and cheerful, considering her grave condition. The breasts were wasted, the tongue dry and glazed, the chest and arms were very thin, the buttocks emaciated, the legs very oedematous and shiny. The abdomen

FIG. 2 (Case x).—Showing a few adhesions and collapsed cyst wall perforated at one spot. (Three-quarter natural size.

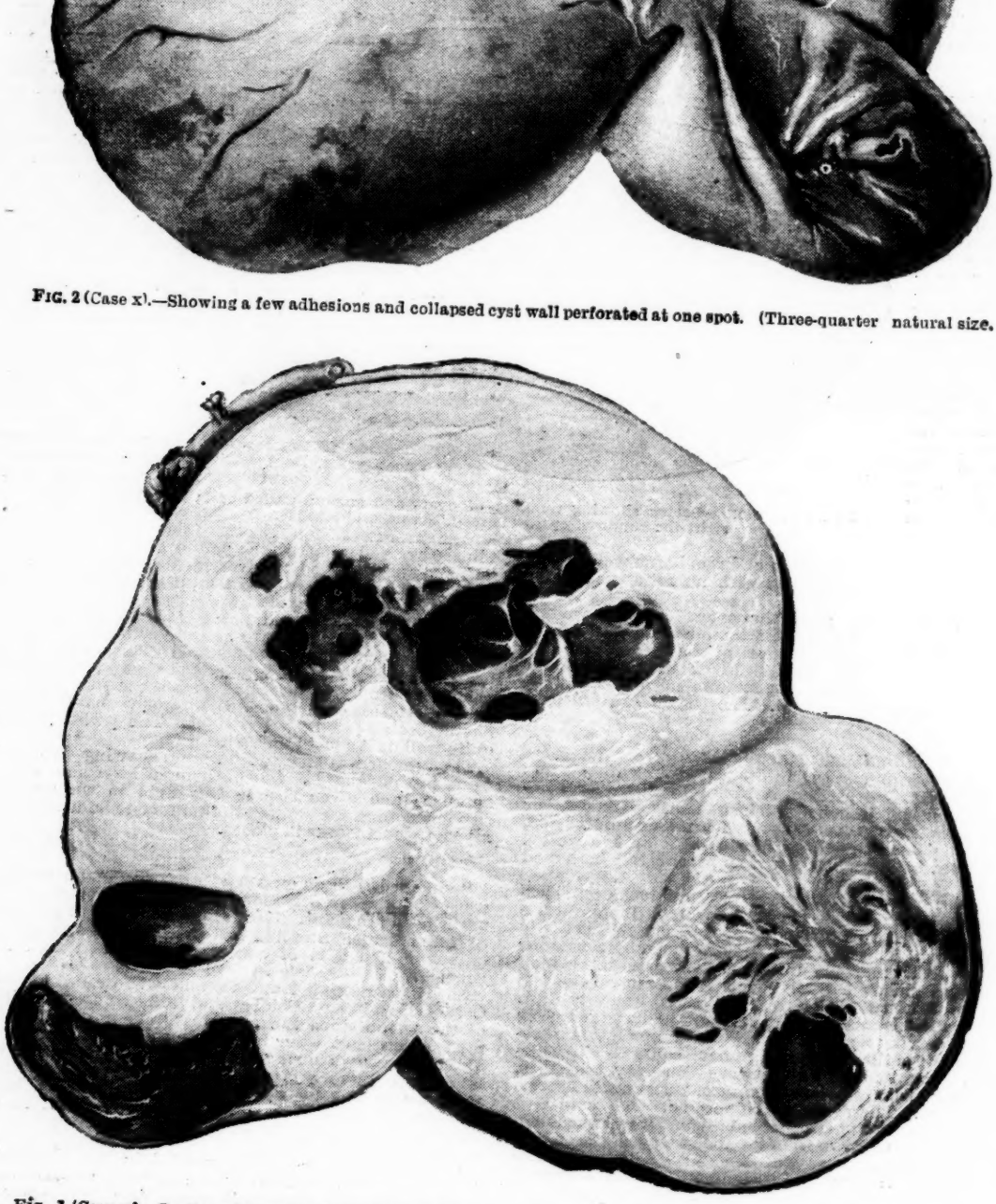

FIG. 3 (Case x).—Section of tumour, showing several cysts; below, partly filled with blood clot, the ruptured cyst. (Three-quarters natural size.)

was considerably distended, and there was a large amount of free fluid in the abdomen. Through this a firm mass could be felt three inches to the right of the left anterior superior spine; another mass could be felt by dipping on the right side, the whole mass reaching nearly up to the umbilicus, and being covered in front by free fluid. A very large rectocele protruded from the vulva and rendered examination of the vagina difficult; but a hard irregular mass fixed to the left pelvic wall was felt to the left of the cervix and in Douglas's pouch. The glands in the groins were not enlarged. The urine (sp. gr. 1010) was free from albumin and sugar.

The case was diagnosed as malignant disease of the ovaries and peritoneum, probably secondary to cancer of the stomach, which was suggested by the wasting and the vomiting, and by the pain and tenderness in the epigastrium. The patient was kept under observation in the ward, and gradually the oedema of the legs disappeared. At the same time the vomiting gradually ceased, and the amount of free fluid in the abdomen lessened, though it still was so considerable as to render palpation difficult. The tongue was rather dry, but fairly clean, and the patient remained cheerful. The temperature, which was 99.6° on the day of admission, and 99.4° the next day, was afterwards usually about 98°, and only reached 99° on one occasion during her long stay in the hospital. The pulse beat was about 90. The patient had been in the hospital for two months, but except for the extreme emaciation she had improved; especially the disappearance of the oedema of the legs was regarded as a good sign. She weighed 7 st. 7 lb. on admission, 7 st. on November 9th, and the same on November 28th. On that day, on examining the abdomen, I thought the hard abdominal tumour moved as one large mass from side to side, floating in the fluid though anchored below; and, as such a tumour could hardly be malignant, I diagnosed it as an ovarian fibroid which had probably ruptured.

At the operation on December 2nd, 1922, this was found to be the case. On incising the abdominal wall several pints of free fluid escaped and the large tumour was found to be free from adhesions except in Douglas's pouch, where two cystic portions had ruptured and led to adhesions there. They were separated without difficulty, leaving a layer of mucoid exudate at the bottom of Douglas's pouch, and the tumour was removed. It occupied the right ovary and its pedicle was adherent to the mesentery of the appendix, which lay in the small pelvis, but was apparently healthy. The pedicle was tied and stitched over with silk; the adhesion to the mesoappendix was also ligatured, and a string-like band which passed from the small intestine towards the fundus of the bladder was tied and excised. The uterus and left ovary were atrophied and were not removed. The wound was stitched with through-and-through stitches of silkworm gut, silk (continuous for the peritoneum and interrupted for the fascia) and silkworm gut for the skin. The operation lasted forty minutes. The anaesthetic was open ether.

The recovery after the operation was ideally simple. The wound healed by first intention and the temperature was normal or subnormal throughout the convalescence. The patient got up on December 27th and left the hospital quite well on January 3rd, 1923.

The tumour was hard, rounded, somewhat triangular, and flattened, measured 7 in. by 7 in. by 3½ in. and weighed 3 lb. 6½ oz. It had some small prominences on the surface and was irregularly depressed where the larger ruptured cyst lay. The tumour was dusky red in places, especially below (where it had ruptured), and had several large veins coursing over its surface. At two places near the surface it had become cystic, one of the cysts being as big as a duck's egg, the other as big as a grape. Both these had ruptured, causing adhesions which were visible in the neighbourhood (see Fig. 2). The collapsed wall of the larger cyst lay in a depression of the tumour, and the rupture might have escaped notice on superficial examination; but the collapsed cyst could be picked up with the point of a needle, and by introducing a fine hollow needle into the cyst through the solid part of the tumour and injecting fluid the cyst and the hole in its wall were easily demonstrated.

On section through the tumour it was found to have the typical structure of an ovarian fibroid, degenerated in several places; the degeneration had advanced to the extent of forming a considerable irregular cavity in the middle of the tumour filled with jelly-like contents and having an irregular wall with bridles of tissue crossing it (Fig. 3). Another cyst near the surface as big as an almond had a smooth and slightly blood-stained wall. In addition the large cyst which had ruptured was partly filled with blood clot and the smaller ruptured cyst exuded clear yellow fluid. A section at the hilum showed the tumour sharply demarcated from the normal ovarian tissue. There was an accessory ostium in the Fallopian tube.

Microscopic examination showed the tumour to be a fibromyoma, being mostly composed of bundles of muscular tissue which had undergone hyaline degeneration and in places was oedematous or liquefied into cysts. The ovarian tissue at the hilum had also undergone marked hyaline degeneration.

Frequency of Ovariotomy in Women over 70 Years of Age.

The above 10 cases occurred amongst 625 cases of ovarian tumour operated on by me, the frequency being 1.6 per cent. They are the only cases I have seen—that is, every case seen has been operated on.

Amongst Spencer Wells's[1] first 500 cases there was no patient over 70; amongst his second series of 500 two cases (aged 70 and 77) occurred; one of them died from the operation. No doubt a selection of cases for operation had been made, as was not unusual in the early days of ovariotomy. Spencer Wells's percentage of frequency, as the figures stand, is 0.2 per cent., or a little more, for in 15 cases of his second series of 500 the age is not given.

Howard Kelly[2] published 5 cases of ovariotomy in women over 70 years of age which occurred amongst 150 cases; one of these, however, was only an exploratory operation, was operated upon on May 2nd, 1896, and was published as a "recovery" ten days later; there were thus only 4 cases in which the patients were over 70 years of age in 150 ovariotomies (2.6 per cent.).

At the Würzburg clinic[3] amongst 100 cases of ovariotomy, and at the Jena clinic[4] amongst 257, making together 357 cases, there was no patient over 70 years of age.

Ten Cases of Ovariotomy in Patients over 70 Years of Age.

Initial.	Age.	Children.	Abortions.	Duration in Minutes.	Date.	Side.	Drainage.	Fascia Stitched.	Adhesions.	Operation.	Recovered.	Remarks.
M. A. F.	82	5	0	17	Dec. 19, 1892	L.	No	No	A few shreds on right side	L. ovariotomy	Yes	L. ovarian tumour, pedicle twisted 1½ turn; R. ovary normal, not removed. Anaesthetic, gas and ether.
E. F.	71	15	2	34	July 11, 1898	R.	No	Yes	No	R. ovariotomy and hysteropexy	Yes	Enormous R. ovarian cyst with procidentia uteri; pedicle tied to abdominal peritoneum and a ligature passed through abdominal wall around L. round ligament. Anaesthetic, gas and ether.
L. B.	70	2	—	14	May 28, 1908	L.	No	Yes	No	L. ovariotomy	Yes	Patient very feeble; operation very easy. Tumour size of ostrich egg. R. ovary normal, not removed. Anaesthetic, chloroform.
B.	74	2	0	45	May 4, 1914	L.	Tube three days	Yes	Dense to abdominal wall and bladder (opened)	L. ovariotomy	Yes	Patient had severe attack of cerebral apoplexy 3 years before; was ill for 5 months and thought on many occasions to be dying. R ovary normal, not removed. Anaesthetic, ether. Died of haematemesis, Oct. 15th, 1920.
C. G.	71	0	0	20	Feb. 20, 1916	L.	No	Yes	No	L. ovariotomy	Yes	Virgin. Large left multilocular cyst size of uterus at term noticed 6 months; no solid growth, no papilloma. R ovary small, not removed. Anaesthetic, ether. Living in fair health in February, 1923.
C. D.	70	4	0	25	July 20, 1918	L. R.	No	Yes	No	Bilateral ovariotomy	Yes	L. multilocular cyst size of uterus at term; calcified fibroid in uterus. R. ovary small, cystic, removed. Anaesthetic, ether. In good health, January, 1923.
I. E.	71	2	0	53	Dec. 21, 1918	L.	No	Yes	To omentum and abdominal wall; of omentum to sac of hernia	L. ovariotomy and herniotomy	Yes	Large multilocular cyst with no solid parts or papilloma; omentum in left inguinal canal reduced, adherent to mouth of sac (closed by purse-string suture). Anaesthetic, chloroform and ether. In good health, January, 1923.
L. A.	70	11	0	28	May 8, 1919	R.	No	Yes	No	R. ovariotomy	Yes	R. large multilocular cyst (no solid growths or papilloma). L. ovary normal, not removed. Anaesthetic, chloroform followed by (closed) ether. In fairly good health, January, 1923.
E. S.	70	7	3	32	July 2, 1921	L.	No	Yes	No	L. ovariotomy	Yes	L. ovarian fibroid (2 lb. 10 oz.), ruptured, free fluid in abdomen. Patient in good condition, cheerful. Anaesthetic, ether. In good health, February, 1923.
S. S.	71	0	0	40	Dec. 2, 1922	R.	No	Yes	To Douglas's pouch and mesentery of appendix	R. ovariotomy	Yes	R. ovarian fibroid (3 lb. 6½ oz.), ruptured, free fluid in abdomen. Patient very emaciated, cachectic, but cheerful. Anaesthetic, ether.

Until ovariotomists publish the whole of their cases it will be impossible to give the frequency of ovariotomy in women over 70 years of age. Its rarity may be inferred from the fact that Wiel[5] was (in 1905) only able to collect 130 published cases.

Age of the Patients.

The age of my 10 patients varied from 70 to 82.

In 1891 Bland-Sutton[6] published a list of 22 cases of ovariotomy performed by various operators on patients over 70 years of age. In 1895 Remfry[7] published a case and collected a list of 10 cases of ovariotomy performed on patients over 80 years of age. The oldest patient operated on was Thornton's at the age of 94.

These lists have been enlarged by Wiel[8] (in 1905) to 130 cases for women over 70, including 14* (all successful) for women over 80. The cases now recorded will bring the list for patients over 70 up to 139 (my first case, aged 82, appeared in Wiel's list of women over 80).

In the museum of University College Hospital (Gynaecological Specimen No. 452) is a multilocular ovarian tumour which was removed by Dr. Blacker from a patient aged 92½ years; the patient died of acute bronchitis on the eighth day. This case, with the 7 additional cases mentioned below under the heading "Nature of the Tumour," brings the total list for patients over 70 to 147. Amongst these additional operations are Pfannenstiel's[9] (for fibroma) at the age of 83, v. Mars's[10] and Peaudeleu's[11] (*post-mortem* specimen) at the age of 82, Küstner's[12] at the age of 86, making in all 17 cases of ovariotomy in women over 80 with one death (5.8 per cent.).

The small number of the cases on record at the advanced age of over 80 does not permit us to obtain the true percentage mortality, which is probably not less than that for patients over 70; but it is satisfactory to find that even at this advanced age the operation can be undertaken with a good chance of success.

Seventeen Cases of Ovariotomy in Women over 80 Years of Age.

Author.	Patient's Age.	Tumour.	Result.	Reference.
Schroeder ...	80	Multilocular cyst	Recovery	Handb. der Krank. d. Weib. Geschlechtsorgane, 1889, p. 512.
Richardson...	80	Ditto	Ditto	British Medical Journal, 1894, i, p. 523.
Pippingsköld	80	Ditto	Ditto	Finska Läkare. Hand., 1884.
H. Smith ...	81	Cyst	Ditto	Lancet, 1891, i, p. 1618.
Edis	81	Multilocular cyst	Ditto	Brit. Gyn. Journ., 1892, p. 162.
Cartledge ...	81	Ditto	Ditto	Trans. South. Surg. and Gyn. Assoc., x, 153.
H. R. Spencer	82	Ditto	Ditto	British Medical Journal, 1893, ii, 1271.
Homans ...	82	Ditto	Ditto	Boston Med. and Surg. Journ., 1888, cxvii, 454.
v. Mars ...	82	Ditto	Ditto	Frommel's Jahresb., 1901, p. 230.
Remfry ...	83	Cyst	Ditto	Trans. Obstet. Soc., xxxvii, 155.
Pfannenstiel	83	Fibroma	Ditto	Veit's Handb., Bd. IV, i, 318.
Kraft... ...	84	Cyst	Ditto	Hospitalskunde, Copenhagen.
Bush	84	Ditto	Ditto	British Medical Journal, 1894, ii, 67.
Owens ...	86	Ditto	Ditto	Lancet, 1895, i, 542.
Küstner ...	86	Ditto	Ditto	Deut. med. Woch., 1902, 285.
Blacker ...	92	Multilocular cyst	Died*	Univ. Coll. Hosp. Catalogue of Gynaecological Specimens, 1911, No. 452.
Thornton ...	94	Cyst	Recovery	Trans. Obstet. Soc., xxxvii, 152.

* Death from acute bronchitis on the eighth day.

Fertility of the Patients.

One of the patients was a virgin; another had never been pregnant, though living a married life for thirty-three years from the age of 21. The other 8 patients all had children—43 in all, an average of over 5 children; one (Case IX) in addition to 7 children had had three miscarriages; Case II had had 15 children, Case VIII 11 children. The sterile married patient (Case X) had (like Case IX) a large ovarian fibroid. It is probable that this had nothing to do with the sterility, for I have published three cases of pregnancy complicated with ovarian fibroids.[13] One of these had bilateral tumours; this controverts Pfannenstiel's[14] statement that ovarian fibroids when bilateral "naturally are associated with sterility."

Complications.

Three of the patients suffered from procidentia or rectocele, one from inguinal hernia, two from ruptured cyst in an ovarian fibroid.

Adhesions were met with in four cases. In one of these (Case IV) they were very dense, and in separating them the bladder was opened. This patient had recovered from a severe attack of cerebral apoplexy, and is an instance of tolerance of a severe operation by a woman of 74. A much more remarkable instance of this tolerance was published by I. Boeckel[15] of Strasbourg. His patient was 73 years of age and had ovariotomy and resection of intestine performed for a suppurating tumour which had been tapped fifteen times: partial gangrene of the bladder resulted in a fistula, which was operated on and cured.

Nature of the Tumour.

All the ten tumours were benign. Eight were multilocular cysts: one of these (No. 6) had small patches of papilloma on its inner surface; the others were free from papilloma or solid growth. The ninth and tenth cases had an ovarian fibroma, which in each was degenerated and ruptured. Adding my nine unpublished cases to the table of Wiel's cases we get:

	Cases.
Multilocular cysts	42
Unilocular cysts	24
Papillomatous cysts...	9
Fibroma...	6
Parovarian cysts	4
Carcinoma	4
Dermoid cysts...	2
Sarcoma	1
Tuberculosis	1
	123

If we add 7* cases omitted from Wiel's list or appearing since its publication (of which 2 were fibroma and 3 were cysts, and in 2 the nature of the tumour is not ascertained) it will be seen that no less than 108 of the 130 cases were ovarian cysts; 4 were parovarian cysts and 2 were dermoids, 8 were fibromata, 4 were carcinomata, and 1 was a sarcoma. Thus only 5 tumours were malignant, or about 4 per cent., which contrasts with a percentage of malignancy about six times as great in ovarian tumours generally. The lower frequency of malignancy in women over 70 years of age is of importance in enabling us to decide more confidently on removal of the tumours. It will be noticed that the frequency of fibroma is very high (over 6 per cent.), while the frequency of dermoids is very low (under 2 per cent.).

List of Eight Cases of Ovariotomy for Fibroid of Ovary in Women over 70 Years of Age.

Author.	Patient's Age.	Remarks.	Reference.
Löhlein ...	70	Fibroma of right ovary size of man's head; ascites	Kelly and Sherwood, Johns Hopkins Hosp. Rep., iii, p. 530.
McCann ...	73	Fibroma of right ovary; no ascites	British Medical Journal, 1903, i, 127.
Terrier ...	77	Fibroma both ovaries; ascites	Prog. méd., 1888, p. 466.
Morison ...	72	Multilocular cyst of right, fibroma of left ovary size of walnut	Lancet, January 21st, 1911, p. 135.
Pfannenstiel	83	Fibroma removed under local anaesthesia	Veit's Handb. d. Gyn., 1918, Bd. IV, i, p. 318.
Löbl	73	Fibroid ossified; had a cyst reaching to navel*	Arch. f. Gyn., Bd. VI, p. 1.
H. R. Spencer	70	Fibro-myoma, cystic, ruptured; ascites	Present publication.
H. R. Spencer	71	Fibro-myoma, cystic, ruptured; ascites	Present publication.

* Died of septic peritonitis; the remaining seven cases recovered.

The Prognosis of the Operation.

All my ten cases recovered.

Wiel[16] gives a list of 130 cases of ovariotomy in patients over 70, with 16 deaths from the operation. He gives the

* Owens's first case has been erroneously included amongst the octogenarians by Wiel; she was 79 years and 10 months old at the time of operation. The age of Owens's (second) case is given by Bland-Sutton, Remfry, and Wiel as 87; it should be 86.

* Löbl's (73, a fibroma), quoted by Macan, BRITISH MEDICAL JOURNAL, 1903, i, p. 127. Wechsberg's (73), *Wien. klin. Woch.*, 1904, xvii, 3. Pfannenstiel's (83, a fibroma, and 73). v. Mars's (82). Küstner's (86), loc. cit. Peaudeleu (82), *Marseille méd.*, 1903, xi, 756. Of these Löbl (a fibroma) died; thus the mortality rate of "1 in 8" is not appreciably altered by these additional cases.

mortality rate as 12.3 per cent., but, as the result was not mentioned in 4 cases, there were really 16 deaths in 126 cases = 12.6 per cent.; adding my 9 hitherto unpublished cases and the patient of 92½ mentioned above, gives 136 cases with 17 deaths, or 12.5 per cent.—that is, 1 patient in 8 died from the operation.

If all the cases operated on had been published it is possible that the mortality would be higher; for if we take Kelly and Sherwood's table[17] of those ovariotomists who have published at least 5 cases and add my cases we get the results shown in the following table:

Operation.	Cases.	Deaths.	Remarks.
Halliday Croom ...	6	2	One had cancer of uterus; the other was a parovarian cyst.
I. Homans	12	3	One was a sarcoma, the other benign.
A. Martin	5	1	Embolism.
Werth	5	0	
H. R. Spencer ...	10	0	
Together ...	38	6	A mortality rate of 15 7 per cent.

The mortality is shown in Wiel's table[18] to be very high in malignant cases (which are fortunately rare), 4 out of 5 cases having succumbed; and in parovarian cysts, 2 out of 4 having died. One of the 8 cases of fibroma died (12.5 per cent.). The low mortality of the 17 recorded cases over 80 years of age (5.8 per cent.) has been already mentioned.

Remarks on Ovariotomy in Old Women.

These patients having outlived the allotted span of life show in their own persons a constitution of more than usual strength and in their family histories a tendency to longevity. If their organs are sound and the patients are not too fat they are good subjects for operation, especially if they are of a cheerful temperament.

The special points to be borne in mind in operating are their waning strength, their tendency to mental disturbance, and their liability to bronchitis and pneumonia. With regard to the anaesthetic, I think infiltration and spinal anaesthesia are *generally* unsuitable, as liable to upset the patient's mental equilibrium, though Igel,[19] Wechsberg,[20] and Pfannenstiel[21] have published very successful cases operated on under local anaesthesia, which offers many advantages for a simple ovariotomy in a courageous patient. I think ether is usually preferable to chloroform unless bronchitis be present. I should prefer to postpone operation if the weather were severe. The operation should be performed as rapidly as possible, with due regard to careful suturing. In case of urgency the abdominal wall may be sewn up with through-and-through stitches of silkworm gut by what I call the "reversed-B" suture, the loop of the B apposing the cut edges of the sheath of the rectus. This shortens the operation by several minutes, ensures good apposition of the fascia, and leaves no buried stitch. The head of the patient's bed should be screened from draughts, and the bed should be warmed. Old patients bear cold badly. When King David was old and stricken in years, though they covered him with clothes, yet he gat no heat.[22] The patient should be propped up in bed to prevent hypostatic pneumonia, and sedatives (not morphine) should be given, preferably by the rectum, if sleeplessness occurs.

It is fortunate that malignant tumours are rare in these patients, and a consideration of the results of ovariotomy for benign tumours in women over 70 years of age shows that the operation may be undertaken without selection of cases with every prospect of success, and the patients may survive beyond the fourscore years of the psalmist, and yet their days may not be "but labour and sorrow."

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Hunterian Lectures
ON
MAN'S POSTURE: ITS EVOLUTION AND DISORDERS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

BY

PROFESSOR SIR ARTHUR KEITH, F.R.C.S., F.R.S.,
CONSERVATOR OF THE MUSEUM.

[*Abstracts.*]

LECTURE IV.—THE ADAPTATIONS OF THE ABDOMEN AND OF ITS VISCERA TO THE ORTHOGRADE POSTURE.

VERY early in my inquiries I became impressed by the fact that in the anthropoid or orthograde apes the viscera of the abdomen were very human in shape and arrangement, and that they were fixed to the walls of the cavity in almost the same manner as they are in the abdomen of man. On the other hand, a distinctly different pattern prevailed in the bellies of pronograde monkeys, even in the higher kinds, which are most akin to the gibbons in point of structure. It became apparent, then, as we have seen to be the case with the spine and with the thorax, that the chief of these features in the human abdomen which we recognize as postural adaptations came into existence at that remote period when the gibbon type of anthropoid was evolved; these postural adaptations became further perfected with the appearance of the great anthropoid type, and reached their culmination in the human body with the evolution of the plantigrade mode of progression.

HOW ARE VISCERA SUPPORTED?

At the time I was making these inquiries my conception of the mechanism which supported and kept the abdominal viscera in place was crude and mechanical. I supposed that when we stood up the organs within the abdomen were suspended by their mesenteries much as our coats hang from pegs within a wardrobe. I accepted a belief, then widely current, that in the erect posture a negative pressure or suction arose under the diaphragm and that thus the pressure of the atmosphere assisted in visceral support. Soon after I went to teach anatomy at the London Hospital in 1895 a series of events happened which showed that the mechanism involved in supporting the abdominal viscera was infinitely more complex than had been generally supposed. My attention had been attracted by certain dissecting-room subjects in which the abdominal organs were placed at an abnormally low level, as if their supports had given way. Of 71 subjects I found 10 in which the diaphragm and the organs within its domes were 2 inches or more below what was the usual level; in 15 other subjects there was a partial dropping of the viscera. My friend Dr. Christopher Addison, who had not then taken on the cares of statesmanship, had published very exact observations on the position of the abdominal viscera of 40 subjects; in 2 of them the upper abdominal viscera had dropped downwards to a marked extent, in 10 there was present a condition of partial prolapse affecting one or more organs. Then, when I was regarding this matter as one of merely anatomical interest, there appeared, in 1899, Dr. Franz Glénard's great volume entitled *Les Ptoses Viscérales*; he had become interested in the sagging of the abdominal viscera from a clinical point of view as early as 1885: in the patients who crowded to Vichy for the cure of dyspepsia and neurasthenia he found the condition of enteroptosis to be very common. In seeking for an explanation of how the dropping of viscera came about I turned to the out-patient department of the London Hospital, where an *x*-ray apparatus had been installed at an early date. It was possible then for all of us to examine the position of viscera in the thorax and abdomen of the living—particularly the organs which occupy the domes of the diaphragm. It became clear to everyone then that the viscera in the upper segment of the abdomen formed part of a respiratory piston. The upper end of the piston is covered by the diaphragm. When that muscle contracts during inspiration the upper end of the piston moves in a downward and forward direction; the piston is returned by a contraction of the muscles of the belly wall; the visceral piston is not only supported by muscles, it is delicately poised, in all phases of respiration, between the opposing

muscular groups. In those in whom the abdominal type of respiration is well developed the respiratory piston has a stroke of 3 inches, or even more when a deep breath is taken. Such observations compelled one to reconsider the mechanism of visceral support.

Intra-abdominal Pressures.

It was an easy matter to show that subdiaphragmatic suction had nothing to do with keeping the viscera up. When the interior of the cardiac end of the stomach—which lies within the left dome of the diaphragm—was connected with a manometer the intragastric pressure was found, when the subject of the experiment was standing or sitting, to vary between +3 and +5 mm. of mercury. It was only when extreme inspiratory efforts were made to raise and expand the chest that a slight negative pressure appeared. When the subject lay on his back the intragastric pressure rose to 16 mm. Hg. On consulting literature concerning this subject I found my observations were not new; they had been made several times before.[1] Pressures taken within the rectum when the living subject was standing in an easy posture throws further light on the mechanism of visceral support. The intrarectal pressure in these circumstances varied between 15 to 20 mm. Hg. Now if the whole weight of the semi-fluid column of abdominal viscera—360 mm. in height, and with a specific gravity of 1.50—rested on the floor of the pelvis, the intrarectal pressure ought to have been twice the amount observed; there must be, therefore, a suprapelvic mechanism which partially sustains the weight of the visceral column. This clearly cannot be the system of mesenteries and ligaments which pass from the viscera to the walls of the abdomen, for when the abdominal walls are measured from a dead subject, and the trunk is placed in the upright position, the contents of the abdomen, liver, stomach, spleen, and great and small intestine slip downwards until they hang from their mesenteries and ligaments. The descent of the upper organs amounts to about 3 inches, the lower viscera to about 5 inches.

The Reflex Postural Mechanism of the Belly Wall.

Now, as is well known, when a living subject raises his body to the sitting or standing posture the upper viscera do not drop more than a half or three-quarters of an inch; the ligaments and mesenteries can therefore take no part in sustaining the viscera. The supporting structures are the muscles of the belly wall; particularly is the transversalis muscle important in this respect; it is a living belt which girds the loins. The moment we assume a sitting or standing posture there is set going a reflex mechanism which throws the muscles of the belly wall into a state of postural tone. François Franck noted that when a dog was chloroformed in the upright position tone departed from the muscles of the belly wall and the viscera sagged. When the posterior roots of the abdominal spinal nerves are cut, or, as Sherrington has demonstrated, when the afferent nerves from the viscera are severed, the abdominal musculature loses its postural tone. Surgeons are well aware that dragging on a mesentery or visceral ligament in an imperfectly anaesthetized patient gives rise to a dragging pain and to nausea[2]; the parietal peritoneum has a rich supply of sensory nerves. At the roots of mesenteries and within them are numerous Pacinian-like corpuscles. Very probably the afferent stimuli which set the reflex postural mechanism into operation arise from some or all of these sensory terminals. Possibly, too, the mechanism may require the accessory action of one or more hormone substances. It is sufficient for our present purpose to realize that the assumption of the orthograde posture demanded an elaboration of the mechanism of visceral support. Under modern conditions of life, this postural mechanism of man's body is particularly liable to break down. The cause of this breakdown we do not know, but all available evidence points to its being connected with errors in feeding and living rather than with any imperfection in Nature's evolutionary workmanship.

The Function of Mesenteries and of Visceral Ligaments.

If, as I have stated, mesenteries and visceral ligaments do not suspend the abdominal organs, then what are they for? If they do not serve the purpose of support, why is it that as we pass from the higher pronograde apes to the lower orthograde apes the areas of visceral fixation become much more extensive and closer? Then, again, as we pass from the gibbon to the large anthropoid apes we note that the process of adhesion has extended, and reaches its farthest point in the human body. There cannot be a shadow of doubt that the degree of peritoneal fixation keeps step with the degree of adaptation of the body to the erect posture. The explanation lies in a proper understanding of the law of ligaments. In the maintenance of posture Nature never uses ligaments; it is always muscle, striped or unstriped, she employs for this purpose. I know of only one exception, and that is where yellow elastic tissue is employed between the laminae of vertebrae and in the subcutaneous tissue in the ventral wall of pronograde animals. Ligaments only come into action when the muscular supports or guards have been overcome or have broken down; ligaments are a second line of defence—the first line is always held by muscles. Hence it is that if the postural tone of the abdominal musculature is damaged then the mesenteries and visceral ligaments come into action; the dropped organs become supported or suspended by their attachments. Very probably Mr. H. Tyrrell Gray is right in ascribing certain symptoms and disorders of intestinal function to tension on the nerves lying within the mesenteries. The increased areas of visceral fixation to be seen in the bodies of orthograde primates, particularly in the human body, are not for the suspension of organs, but to limit their movements and prevent entanglements. For example, it is not uncommon to find in the human body that the mesentery of the "ileo-caecal loop" has not become adherent to the posterior wall of the abdomen, but has remained free as in pronograde apes. In such cases neither the caecum nor ileum falls below its usual level; what does often happen is that the unfixed condition of the ileo-caecal tract permits a freedom of movement which may end in the loop becoming twisted and the bowel acutely obstructed.

Intra-abdominal Stresses.

There is another line of evidence which helps us to understand why peritoneal fixation has assumed so extensive a development in the human body. We are apt to forget that the chief muscles of the belly wall, the two recti, the external obliques, and the internal obliques, are primarily muscles of the spine; they are the powerful postural antagonists of the component elements of the erector spinae muscles. The spinal muscles thus form a great cylinder, within which is packed the column of abdominal contents. Thus the abdominal contents are subject to the compressive action of the cylinder of postural muscle. During violent muscular effort the intra-abdominal pressure will mount up to 100 or 150 mm. Hg. In pronograde apes we cannot conceive that such high pressures can arise; the postural musculature of their trunks uses both fore and hind limbs as bases of action. With the evolution and maintenance of the orthograde posture, the shortening of the loins and extension of the thighs, the abdominal contents became subjected to greater degrees of compression and displacement, but even in the great anthropoids the maintenance of posture does not fall entirely on the musculature of the abdominal walls; weight in the upright position is partially borne by their upper extremities. It was with the evolution of the plantigrade posture of the human body that the postural compression of the abdominal viscera reached its highest point. The arms no longer assisted in supporting the body; the reverse became the case—the erect trunk had to afford a firm basis of action for the arms. For this purpose the postural complex of muscles which surround and enclose the abdominal cavity is called continuously into action. They tend to compress and displace the contents of the abdomen, and hence the human posture demands the most extensive system of visceral attachment.

It has also to be remembered that the upper viscera of the abdomen move with the respiratory tide. They must be fixed and shaped so that they may respond to all movements of the diaphragm and changes in shape of the thorax.[3] The respiratory factor has to be kept in mind when we seek to explain the altered fixation of the abdominal viscera which occurred with the evolution of the orthograde posture.

Transformation of the Abdominal Cavity.

Thus we see that the evolution of the orthograde posture was attended by a revolution in the attachment of the abdominal viscera and by an elaboration of the muscular mechanisms which keep the trunk erect and support the contents of the abdomen. Then, too, came a transformation in the shape of the abdominal cavity and a remodelling of such solid viscera as the liver and spleen. Everyone is familiar with the long loins of the commoner monkeys and the keel-like form given to the hinder part of their bodies. In

their usual pronograde or "four-footed" mode of progression the chest is more ventral in position than the flanks; hence the abdominal viscera tend to sag against the diaphragm. The iliac part of their pelvis is long, narrow, and situated dorsally, thus permitting the ventral musculature to exert an unfettered control over the contents in the hinder part of the abdomen. That part of their abdominal cavity which lies within the wings of the thorax is deep from back to front, but relatively narrow from side to side. We have seen that with the evolution of the orthograde posture the loins became shortened by the addition first of one lumbar vertebra to the sacrum, then of another. The dorsal wall of the abdomen was thus curtailed; so too were the abdominal aorta and the dorsal attachment of the mesentery. Attention has already been drawn to the widening of the orthograde trunk and to the flattening of its dorsal and ventral surfaces; the abdominal cavity necessarily underwent a corresponding change in shape: the domes of the diaphragm became wider and more capacious. A feature which is particularly worthy of note was the increased protrusion of the bodies of the vertebrae within the cavities of the thorax and abdomen. This vertebral protrusion led to a deepening of the hypochondriac recess which lies on each side of the vertebral column. In man, particularly after the lumbar curvature is fully developed, these recesses become deep and capacious. With the deepening of the recesses the viscera which lie within them, especially the kidneys, become withdrawn from direct muscular support, and hence are particularly liable to displacement. These changes in the shape of the abdominal cavity, which became more marked with each succeeding phase in the evolution of the orthograde posture, necessarily affected the form of the contained viscera and their mode of fixation.

THE EVOLUTIONARY RÔLE OF PERITONEAL ADHESIONS.

Having thus sketched in outline the chief changes which overtook the abdominal wall during the evolution of the upright body I now turn to note the postural adaptations to be recognized in the contained viscera. It is impossible in the course of a single lecture to deal with the matter fully; I shall restrict myself to one or two of the more significant changes, particularly those which have been brought about by a more extensive peritoneal adhesion of the viscera.

In the lowest and oldest primates known, as in the more recent and more highly specialized, the alimentary tract, from oesophagus to anus, falls into four natural sections or loops. These are: (1) the gastric loop, (2) the duodenal, (3) the ileo-colic, (4) the recto-colic. In the lowest primates these four loops are attached to the median line of the dorsal wall of the abdominal cavity by a continuous peritoneal sheet—the common mesentery. Even in this earliest of stages the gastric loop is seen to have undergone a rotation and its mesentery has become ballooned out to form a great omental sac—an occurrence which shows us that mesenteries are more than mere ligaments and that peritoneum is much more than a passive lining for the abdominal cavity. Even among pronograde monkeys the mesentery of the duodenal loop and the omental sac show various degrees of adhesion to the posterior wall of the abdomen. In the pronograde monkeys of the old world adhesions have already become extensive. The duodenum and pancreas have become sealed to the posterior wall of the abdomen. The rotation of the ileo-colic loop is now so complete that the proximal part of the colon falls into the right lumbar region in front of the duodenum. In the duodenal or right lumbar area an interesting complex of peritoneal adhesions is formed, chiefly out of the right extremity of the omental sac, which is attached to the pyloric end of the stomach and commencement of the duodenum. The fringes of the right end of the omentum have become plastic and adhesive in nature; they help to bind the colon to the right lumbar region and represent the initial stage in the evolution of the so-called Jacksonian membrane. In the old-world monkeys, too, is to be seen the first stage in the adhesion of the mesentery of the small bowel and transverse mesocolon—which collectively represent the common mesentery of the ileo-colon. The area of adhesion is restricted to the neighbourhood of the "root" of the mesentery. The mesentery of the distal part of the colon retains its primitive median attachment.

Then, when we pass from the highest of the pronograde apes to the lowest orthograde form represented by the gibbon, we find the process of peritoneal adhesion has proceeded apace. The omental sac has not only become adherent to the posterior abdominal wall but has become fused with the mesentery of the transverse segment of the colon. Its right or hepatic extremity forms adhesive colic bonds in the loin, while its left or splenic extremity does the same in the left hypochondrium. The spleen has become adherent over the left kidney. The posterior aspects of both oesophageal and pyloric ends of the stomach have become more adherent. The fixation of the mesentery of the ileo-colon, which has reached only an initial stage in old-world monkeys, has become more extensive in the gibbon, but the extremity of the loop, including the terminal part of the small intestine and the beginning of the large intestine, is still free. It is in the gibbon we see the first stage in the process of sealing down the mesentery of the distal segment of the colon. The mesentery attached to the splenic flexure becomes fixed to the posterior wall of the abdomen, while the mesentery of the descending and sigmoid colons remains almost as free as in pronograde apes. In the great anthropoid apes we see a stage of adhesion which takes us almost to the extent seen in the human body. The colic adhesions developed out of the omental extremities at the hepatic and splenic flexures have become particularly abundant. The posterior aspect of ileo-colic mesentery has become adherent almost to the termination of the ileum. The mesentery of the descending colon has become sealed down to the left lumbar region, and the root of the meso-sigmoid shows signs of wider attachment. The human is but a slight exaggeration of the anthropoid stage.

Thus in the degrees to which the viscera are bound to the abdominal wall by a process of adhesion we have a complete series of evolutionary stages leading from the lowest stage seen in pronograde monkey to the stage seen in the highest orthograde primate—man. Nature has used the process of peritoneal adhesion as part of her evolutionary machinery. That she has done so is made manifest by the recapitulation of the evolutionary series in the developing abdominal system of the human foetus. It is but seldom that the developmental processes of the human body recapitulate evolutionary history with any degree of clearness; but in the development of the mesenteric adhesions I think there can be no doubt evolutionary history is repeated.

HOW DO POSTURAL ADAPTATIONS OF THE PERITONEUM ARISE?

Long ago Sir William Arbuthnot Lane recognized that there was a connexion between posture and the formation of peritoneal adhesions. He spoke of such adhesions as being "crystallizations in the lines of force." This explanation may be true, but it does not help us to understand how adhesions occur in the foetus. A more profitable approach to the problem is the recognition that all the cells which line the peritoneum have in them, as an inherent quality, the power to form adhesions; that power becomes manifest whenever an irritant or toxic substance is applied to them. We must suppose, then, that this quality which is inherent in living peritoneal cells can be evoked somehow during embryonic and foetal life. The stimulus, whatever its nature may be, acts in a controlled manner on a sequence of definite areas, and produces a series of adaptational adhesions which serve to meet a need of the body.

THE DESCENT OF THE TESTES.

To understand the protean and plastic qualities of developing peritoneum one has only to recall Hunter's account of the nature of the process which brings about descent of the testicle. The gubernaculum testis may be described as a peritoneal growth plug; it is a cellular mass formed out of peritoneum and subperitoneal elements. The gubernaculum as it approaches the groin brings about a proliferation and an evagination of all the strata of the inguinal wall. The descent of the testicle, whatever the physiological reason for it may be, is not a more obscure or a more wonderful process than the formation of a peritoneal adhesion. Both are manifestations of developmental or growth qualities inherent in the lining membrane of the abdomen. Hunter has been criticized for using the phrase "stimulus of perfection" to designate the cause which set the machinery of descent in motion. If we translate Hunter's phrase "stimulus of perfection" to mean a hormone substance which is produced by a normal developing testis, we are only giving his language and his explanation a modern garb.

One other instance I may cite to illustrate the active qualities of developing peritoneum. In all forms of primates the ileo-colic loop of intestine undergoes a rotation during development, the rotation bringing the beginning of the colon into the right lumbar region. In the human embryo the

rotation of this loop takes place as it is withdrawn from the umbilical sac at the end of the second month of foetal life. My friend Professor J. E. S. Frazer has made a very thorough study of the mechanism[4] which brings about the turning over of the colic end of the loop. From his observations there can be no doubt, I think, that the retraction of the loop from the umbilicus and its rotation are produced by certain growth bands—or rather retraction bands—which develop along certain sectors of the mesentery of the loop. The rotation of the ileo-colic intestinal loop is a growth phenomenon not unlike in nature to that which we see manifested in the descent of the testicle.

It would take us too far afield in this lecture to discuss the modifications undergone by the liver and stomach with the evolution of the orthograde posture. I shall content myself, so far as the liver is concerned, by drawing attention to the fact that the change in posture was attended, as in the adjacent right lung, by the disappearance of the large caudate lobe. In the human liver a vestige of the caudate lobe is always present, showing that man has come of an ancestry which was pronograde in posture. As for the stomach, I shall merely mention that in the human child this organ is shaped as in anthropoid apes, and occupies the same high horizontal position. At what period of adolescence the infantile form is replaced by the elongated, vertically placed stomach of adult life has yet to be ascertained, but the change in shape must certainly be attributed to man's erect posture.

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A NOTE ON THE NATURE OF THE SUGAR IN BLOOD.

BY

J. A. HEWITT, PH.D., B.Sc.

(From the Department of Physiology, King's College, University of London.)

THE recent important advances made by Irvine and his co-workers as to the constitution of the carbohydrates lend themselves admirably to speculation regarding the possible function and significance of the now definitely established "γ" sugars in the metabolic processes of both plant and animal.

Direct evidence of the formation of these reactive isomerides in biological reactions was lacking until the present author and Pryde (Hewitt and Pryde, 1920) showed with some certainty that γ glucose and γ fructose are formed and can be detected when the stable α and β isomerides are in contact with living intact intestine. We contented ourselves with recording the experimental facts, and refrained from discussing any theoretical extension of the work, attractive and obvious as such discussion was, beyond saying, "The possibility thus suggests itself that in the rapid transformation of carbohydrate in living tissues γ sugars may play an important if not an essential part." Later Hewitt and de Souza (1921) remarked with similar reserve on this question, "It may be presumed on *a priori* grounds that a structural change of the nature referred to has some fundamental reason."

Since the communications mentioned above, three publications have appeared in which Hewitt and Pryde's results are quoted in some detail, and in each case are accepted, extended, and employed for the formulation of a theory as to the causation of diabetes mellitus.

Before discussing the evidence adduced in these researches, on which this theory is based, it is perhaps advisable to emphasize the extreme difficulty that exists in interpreting results in this field of work. Most, if not all, of the biochemical data are and must necessarily be indirect; considerable caution is required, therefore, both in devising experiments and in deducing conclusions therefrom if advance is to be made and erroneous conception avoided.

As the known reactions and properties of γ sugars must furnish the final grounds of appeal in discussing their formation or existence in metabolic processes, it might be well to summarize the relevant salient features of such sugars as deduced from the study of their methylated derivatives.

1. They contain an ethylene or propylene oxide ring in place of the butylene ring ascribed to and accepted for the crystalline α and β hexoses.

2. Two γ isomerides exist in the case of each hexose, analogous in their mutual relations to the α and β modifications. Possibly these γ isomers undergo mutarotation *inter se* as well as stereochemical change to the stable form; the last reaction is undoubtedly extremely rapid.

3. The chemical reactivity of γ sugars is very great, and condensation with alcohols to form glucosides takes place rapidly at room temperature. Fehling's solution is reduced in the cold, they unite readily with oxygen to form oxy-compounds, which in turn easily undergo disaccharide formation.

4. Unsubstituted γ sugars show marked instability to traces of acid or alkali.

Such properties manifestly render detection a matter of difficulty, which is further increased when it is remembered that one isomeride of γ glucose is strongly laevo-rotatory, while β glucose is only feebly dextro-rotatory. Apart from isolation of derivatives of these sugars, identification in biological reactions depends on polarimetric determination of optical behaviour and on the reduction of alkaline potassium permanganate.

Polarimetric evidence alone, therefore, must exclude rigorously the presence of β glucose in amount greater than that found normally in aqueous glucose solution in equilibrium. This is referred to in further detail below. The dangers attending the use of permanganate with biological material are obvious; the employment of this reagent requires careful control, and at best can be applied only with extreme caution to such complex solutions as blood or urine.

In my opinion the evidence on which Cooper and Walker (1922) and Winter and Smith (1922) base their theory is insufficient when the essential properties of γ sugars are considered. Cooper and Walker separated blood from a hexose solution (glucose or fructose) by a dialysing membrane and examined, with negative results, the sugar polarimetrically and with permanganate. Several objections can be raised to this technique:

(*a*) The blood was extravascular and, having undergone at least preliminary stages towards coagulation, was not normal. If it were citrated or oxalated (this is not stated) its condition is possibly still more abnormal.

(*b*) Owing to physical properties no enzyme could pass from the blood inside the dialyser to the sugar outside. Before any action could take place the hexose substrate would have to pass through the membrane. Unless preferential dialysis of one of the α or β isomerides had occurred no change in the specific rotation would be found, if the sugars were in equilibrium at the beginning of the experiment.*

(*c*) As the concentration of hexose outside the dialyser was greater than within, no transference of sugar from within outwards would be produced. The value, therefore, of examining the sugar outside does not seem apparent.

(*d*) Inherent dangers in the use of potassium permanganate exist; as, however, no reduction took place, the inference is perhaps not without reason that no dialysis of any component had occurred *in either direction*, for the various extractives of blood are far from inactive as regards this reagent, and owing to relative concentration would be removed from the blood inside to the solution which was tested.

Negative results obtained from experiments based on such technique do not warrant the superstructure of theory erected thereon. Hewitt and de Souza (loc. cit.) had previously clearly demonstrated what Cooper and Walker attempted.

Winter and Smith (1922), in a more elaborate study, reached the conclusion that the normal blood sugar is γ glucose, and that an enzyme exists (not in the blood) for effecting the transformation of the stable butylene oxide glucoses into γ glucose.

I agree that no such enzyme can be demonstrated in the blood (see Hewitt and de Souza, loc. cit.), but am of opinion that objections may be raised both to Winter and Smith's view of blood sugar and to the experimental evidence on which they found their theory.

Dealing with the technique employed by these authors it is to be observed that in the course of preparing their final filtrate for polarimetric examination the following manipulative operations, among others, were performed: (1) precipitation with tungstic acid; (2) heating to 40° C.; (3) addition of ethyl and propyl alcohol and contact with these alcohols for twenty minutes at moderate temperature; (4) concentration

* Possibility of preferential dialysis was apparently not considered. It may be stated, however, that alteration of optical values due to such cause cannot be detected. (Unpublished experiments.)

almost to dryness; and (5) solution in water for at least three days.

Consideration of the known reactions of γ glucose renders it unlikely that such a labile substance would remain unaffected by tungstic acid. Since no strict proof is available as to the action of this reagent on γ sugars this point perhaps should not be stressed. The second operation, heating to 40° C., is one which undoubtedly hastens the mutarotation of any system of isomeric sugars not in equilibrium. The third operation, treatment with alcohol, appears to be one which would rule out all possibility of obtaining the free reactive sugar. I need only refer to the extraordinary capacity which these sugars possess for undergoing glucoside formation with alcohols, or for condensation with acetone. Finally, the acidity of the filtrate is in itself no small objection to the conclusions reached.

It is thus seen that the technique adopted by Winter and Smith is in its essentials one calculated to remove effectively any γ glucose which may have been originally present, and it is difficult to see how the optical observations of the filtrate throw any light on the condition of the original blood sugar.

Dealing next with the times taken to attain a constant optical value, it may be noted that final equilibrium was not reached till after two to four days. It need only be pointed out that such a slow reaction is not a feature of γ sugars or of their mutarotating derivatives. It is regrettable that more complete data are not given, as it is impossible to analyse as fully as might be desired the optical behaviour of the dilute filtrate with a view to interpreting the nature or course of the reaction. It does not appear, however, that the authors have excluded the presence (or formation) of β glucose, with specific rotation + 19°, in amount greater than that in aqueous glucose solution in equilibrium. Similarly with diabetic blood where the optical change is a downward mutarotation, the possibility of the presence of excess of α glucose (specific rotation + 110°) must be admitted. So far as can be judged, the optical variations observed do not lie outside values arising from temporary disturbance of the equilibrium between the α and β butylene oxide glucoses.

No mention is made of precautions to ensure sterility of the sugar solution kept for *four* days. Non-sterility of the final material obtained—containing, presumably, substances susceptible to bacterial action in addition to glucose—might well account for optical changes. The action on permanganate of the filtrate, fresh and after standing for several days, is similarly not conclusive. Relatively simple oxidative changes, or even saturation of unsaturated compounds, might account for the phenomena observed. This apparently was not controlled. Winter and Smith (1923) state also "the sugar" (of normal blood—that is, γ glucose) "gives an osazone with the same crystalline form and melting point as that of glucosazone." In this connexion Irvine, Fyfe, and Hogg (1915) have shown that γ glucose "reacts with phenylhydrazine and acetic acid, but is thereby resinified, and, in addition, a definite anilide, or other crystalline derivative, could not be obtained." This observation hardly supports the presence of γ glucose in the blood examined by Winter and Smith.

The experiments of Winter and Smith cannot be regarded as crucial, and the question demands rigorous investigation before the existence of γ glucose in more than normal traces can be accepted as the circulating sugar of blood.

In addition it may be pointed out that Winter and Smith's suggestion as to the non-formation of γ glucose in the diabetic does not in any way account for the *downward* change in optical values found in blood in this pathological state. If their conclusions were sound the optical value of diabetic blood should not vary on standing under aseptic conditions as there could be no transformation from one isomeride to another and the relation of the optical value to the copper value should be a constant throughout. Evidence from pathological conditions also fails to support the main thesis.

The experimental evidence brought by these authors is not, however, such as lends itself to profitable discussion, but among the many possible complicating factors may be indicated the opposed rotations of the conjugated glycuronates and of the free acid.

While admitting, in the absence of any proof, that the reactive forms of sugars are in all probability of fundamental metabolic importance, it is perhaps not necessary to assume that the normal blood sugar is this modification. If the reserve carbohydrate of plants and animals be considered, in no case (except inulin) is it found that γ sugars are present in combination and are liberated on hydrolysis. Starch glycogen, and cellulose are condensation products of stable butylene oxide glucose. (Irvine, 1922; Irvine and Macdonald, 1922; Irvine, Denham, and Hirst, 1922.)

Inulin is exceptional, and shares with cellulose the distinction of being of but small value to man as a source of carbohydrate. Sucrose appears to be the only foodstuff in which a γ sugar is available as such for absorption, and it will be noted that it has to undergo hydrolysis before the γ fructose is liberated. No form of reserve carbohydrate as such behaves as a γ sugar.

The sugar of blood cannot but be regarded as a store of carbohydrate ready for consumption at short notice, and following the analogy of the known condition of other reserve carbohydrates one would not be surprised to find the simple monosaccharide to be the stable butylene oxide modification. Furthermore, if one considers the extraordinary chemical reactivity of γ sugars it is but reasonable to suppose that they would not be in this condition in blood.

It may well be that only when required for oxidative processes would the stable form undergo stereochemical change into the reactive modification, and free γ glucose might have but a transient existence, and might almost be regarded as an intermediate product in the katabolism of glucose. Evidence of this will possibly be by no means easy to obtain. In this connexion also it may be noted that Dakin (1922), after reviewing the literature on carbohydrate metabolism, concludes: "Active glucose metabolism only seems to occur in the presence of living and surviving cells."

Until evidence is brought that γ glucose does exist as the sugar of blood and does not exist in diabetic blood, no theory of diabetes can be formulated as to the relation of these sugars to this pathological condition. Observations are in progress on the optical behaviour of equilibrated solutions of sugars in the intestine of the diabetic organism. It is hoped in this way to obtain a decision on this point.

Summary.

1. No evidence exists that γ glucose is a component of normal blood.

2. Theories of diabetes mellitus demanding the presence of γ glucose in normal blood are without experimental foundation.

3. Formation of γ glucose in carbohydrate metabolism may take place as and when required and the active modification may possibly have no more than a transitory existence.

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ON SEPTICAEMIC INFECTION FOLLOWING OPERATIONS FOR APPENDICITIS.

A PROPHYLACTIC SERUM.

BY

HERBERT H. BROWN, O.B.E., M.D., F.R.C.S.,

CONSULTING SURGEON TO THE EAST SUFFOLK HOSPITAL, IPSWICH.

I HAVE drawn attention in previous communications[1] to a train of symptoms which sometimes follows operations for appendicitis in children, if performed from the third to the sixth day from the commencement of the attack, and always leads to a fatal termination within about forty-eight hours; and I gave reasons for my belief that these symptoms indicated a septic infection of the blood taking place at the time of operation.

In the more recent paper I described a case of this kind, in which a bacteriological examination of the blood was made, and the *Streptococcus faecalis* was found in pure culture. Since that date I have seen four similar cases, in each of which the blood was examined during life; in three the *S. faecalis* was found to be present, and in one *Bacillus coli*. I have not found these organisms in the blood in cases in which these symptoms had not made their appearance.

Symptoms of Septicaemic Infection.

The train of events is as follows: The operation is performed on a child on the third, fourth, or fifth day. In some cases nothing but drainage of an abscess is undertaken with as little disturbance as possible; in others the appendix is removed; but in all the infection has already spread beyond the appendix, causing inflammation of the surrounding tissues or actual pus formation.

For the first thirty-six hours, or perhaps a little longer, the child seems to be doing well and all the symptoms are satisfactory. The temperature is often normal, pulse slower than before the operation, abdomen flat, no pain or vomiting. The child usually sleeps well for the first night, and everything appears to be satisfactory. Then a rapid and almost sudden change for the worse takes place; the face becomes pale, the pulse rate commences to rise, the temperature is usually subnormal, the child becomes restless and irritable (this is a very marked feature), then drowsiness with restless intervals supervenes, and an occasional shrill "meningeal" cry is uttered which is very characteristic; in fact, all the symptoms are of a cerebral type—the pupils become dilated; coma with a rapidly rising temperature is followed by death, generally within thirty-six hours of the onset of the symptoms. The clinical picture is a very tragic and striking one, and in each case which I have seen in my own practice or that of others the symptoms have been practically identical.

Post mortem nothing is found to account for death. There is no peritonitis, nothing abnormal in the site of operation, no sign of meningitis.

When my attention was first drawn to these cases, about thirteen years ago, I gave what I believed to be the true explanation of them, and further experience has strongly confirmed that belief. It is well known that patients suffering from appendicitis, even after perforation and abscess formation has taken place, may recover without surgical interference: this was more often seen in former years before operations were as commonly undertaken as they are at present and the disease was spoken of as typhlitis or perityphlitis: the abscess perforated into a neighbouring viscus, generally the caecum, and the patient recovered. Operations, which were performed as a rule later than they are now, some time during the second week, when a large abscess was evident, were attended by little if any danger.

If the infection is very acute or the patient's natural resistance low, Nature unaided by the surgeon is defeated. The appendix wall sloughs and perforates into the general peritoneal cavity, causing a rapidly fatal peritonitis and toxaemia. Nature has had no time to mobilize her forces. But in other cases where the resistance is stronger or the virulence of infection less, and the poison is for a longer period confined to the appendix, toxins leaking through its wall set up inflammatory changes in the surrounding tissues, omentum, bowel, or parietal peritoneum. Before actual pus has been formed, a wall of plastic lymph has been thrown up, covering the surrounding inflamed tissues and shutting off the general cavity of the peritoneum, and at the same time sealing up the lymphatics and blood vessels in the inflamed tissues. It acts like the porcelain of a filter, allowing toxins to percolate through into the lymphatics and blood vessels but holding back the infective organisms—*B. coli* and streptococci. This is the first line of defence.

Its production gives time for the development of the second line, which I believe to be of very great importance—that is, the production of antibodies in the blood. The toxins soaking through the wall of lymph into the blood lead to the production of antibodies, which by the middle of the second week have produced a considerable degree of immunity. There is often at this time (if the patient has been allowed to reach this stage) a considerable improvement in the general condition—the temperature may fall to normal and the pulse rate diminish. The abscess, which is frequently a large one, may be opened without any danger, without even infecting the wound, which has been freely irrigated with stinking pus.

When an operation is performed during the middle of the first week the wall of lymph may be disturbed, or rubbed off, or may not have been properly formed, and a direct inoculation of infective material, containing *B. coli* or *S. faecalis*, into the blood stream may take place. This, after a short incubation period (twenty-four to thirty-six hours, or a little longer), is followed by the onset of symptoms due to septicaemic infection. If the operation is deferred to the second week the blood will have been rendered immune to this infection—the second line of defence will have had time to be mobilized, and these septicaemic symptoms do not appear.

If a case of appendicitis is seen early enough—during the first twenty-four hours—there is no question as to the proper treatment. The appendix should be removed at once. The post-operative risk is practically *nil*, and no drainage is required. But if the case first comes to the surgeon at a later stage the right line of treatment is not so obvious, if the dangerous period from the third to the sixth day of disease is present. It might be wiser to wait for several days until the abscess has reached a fair size and the blood has become relatively immune to infection before operating. But there are dangers and disadvantages in delay. The abscess might burst into the general peritoneal cavity. The child is in pain and distress, the parents are anxious and expecting immediate relief by the surgeon. Should the case end fatally after all, the surgeon will be blamed for his procrastination. It is difficult, even if he so wishes, for the surgeon to withhold his hand.

It occurred to me that it might be possible by injecting a prophylactic serum before and at the time of operation and shortly afterwards, to produce an immunity for the time which would prevent or largely minimize the danger of blood infection at the operation if performed during the dangerous period. I explained my views to Dr. Ledingham of the Lister Institute, who discussed the matter with Dr. MacConkey, the bacteriologist in charge of the serum department. Dr. MacConkey very kindly arranged to immunize a horse with cultures of *S. faecalis* and *B. coli* provided from cases of mine, and last March sent me a supply of serum. Unfortunately I have not been able to test the value of the serum as a prophylactic sufficiently, and as in the meantime I have retired from active work on the hospital staff my opportunities have been lessened. But the serum is still available, and I hope, with the aid of surgical colleagues, to be able to give it a full trial, and publish a further report.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

HYPEREMESIS GRAVIDARUM.

THE following case presents certain features which appear worthy of record:

The patient, a young Jewish lady, had had three pregnancies terminated artificially on account of intractable hyperemesis. She was most anxious to have a child. She became pregnant towards the end of December, 1921, and vomiting began within a few days. She came under my care on January 3rd, 1922. Vomiting was persistent and salivation profuse. I began the line of treatment elaborated by Professor Harding of Toronto. I also administered peptone intramuscularly, having known a number of cases successfully treated by this method by a former partner; in one of these cases the uterus had been emptied twice on account of hyperemesis.

My patient was able to take no nourishment by the mouth except lactose. She improved steadily until on January 16th there was no vomiting and she partook of lemonade, bread-and-butter, and lettuce. Fruit and fish were soon added to the dietary. The condition remained satisfactory until February 14th, when bile was vomited and salivation became profuse. The bilious vomiting increased in frequency and amount, and on February 17th I called in a colleague who had attended her in two previous pregnancies. He expressed great astonishment at her excellent general condition. The bilious vomiting continued with slight intermissions. On March 6th the nurse reported that there had been a slight vaginal discharge. This was brown in colour and odourless. The patient became somewhat restless, but the pulse rate was only slightly raised (90). On the following morning the condition was not improved and the pulse rate had risen to 110. I arranged a consultation with my colleague at the earliest possible moment. When we saw her the pulse rate was 130, and it was decided to empty the uterus, the patient, who was fully conscious, protesting vigorously. The operation was carried out under ether anaesthesia with all possible speed, continuous saline being administered. The heart failed rapidly and death ensued some hours later.

There were no foetal products recognizable in the uterine contents. Albumin was at no time present in the urine, nor was aceto-acetic acid, but bile appeared in the last few days.

NORMAN WILSON, M.A., M.D., B.Ch.Cantab.

Port Elizabeth, South Africa.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

SIERRA LEONE BRANCH.

THE second scientific meeting of this newly organized Branch of the British Medical Association was held at the office of the Director of Medical and Sanitary Services, Freetown, on January 26th, with the President, Professor B. BLACKLOCK, in the chair.

Dr. J. D. DIMOCK presented two cases of interest.

The first was a boy, aged 14 years, with a dental cyst; a brief dissertation on the pathology of the condition was given, and the proposed method of treatment outlined. The second was a female child, aged 8 years, admitted to hospital with general anasarca, unable to open her eyes; distension made palpation of the abdominal viscera impossible: there was intense albuminuria. The provisional diagnosis was ankylostomiasis, but examination of the blood showed the presence of *P. malariae*. In the faeces the only ova found were those of ascaris; careful search on three occasions of the faeces in bulk, after administration of thymol and beta-naphthol, failed to reveal the presence of ankylostomes. Reference was made to a series of nine cases of a similar nature by Macfie, in which series, however, no details were given of examination of faeces. Dr. Dimock considered the oedema to be more severe than any he had observed in uncomplicated helminthic infection.

The PRESIDENT drew attention to a report[1] of the Rockefeller Foundation in which it was recognized that severe malaria cachexia was fairly often mistaken for hookworm disease.

Dr. J. Y. WOOD demonstrated two cases of beri-beri and one case of anaesthetic leprosy.

The first case of beri beri was in the stage of exaggerated knee reflexes, the second had absence of knee-jerks. The first had no alteration in the cardiac rhythm, a feature of the second case. Both cases presented deep hyperaesthesia, Romberg's sign, and oedema over the tibiae. The drug treatment adopted for these cases was digitalis, iron, and diuretics. The case of leprosy, which was of the maculo-anaesthetic type, was under treatment by chaulmoogra oil, administered daily with chloroform intravenously. The dose had been raised from 5 to 20 minims.

Dr. E. J. WRIGHT showed two cases.

The first was a male Syrian, aged 30, who gave no history of a primary lesion, had a rash which resembled a well developed macular syphilide all over the body, the maculae being dusky in the lower part of the abdomen and legs. The rash was irritating and tended to become pustular. There was a history of sudden chill, pain in the joints, and two days later the rash appeared. The joints of his wrists were slightly swollen, and the temperature was 100° F. There was slight albuminuria; no parasites in the blood. The second case was that of a child who, in the course of three weeks, had lost a large portion of his right cheek and of his upper jaw from an ulceration of the cheek. No organism was found which could account for the condition; symptomatic treatment was given. The result of the healing process was the almost complete loss of movement of the lower jaw.

Dr. E. S. WALLS showed a specimen consisting of a tangled mass of ascarides, which had produced severe symptoms in a Creole child aged 7 years.

The symptoms at first pointed to an acute abdominal condition, the temperature being 101.5°, the pulse rate 130, and respirations 130. Deep palpation caused pain in the right iliac fossa, but there was no definite localized rigidity. Bimanual rectal examination revealed nothing positive; constipation was marked; in the urine nothing abnormal was found. For several days symptoms persisted, and the repeated administration of santonin was undertaken owing to a previous history of the vomiting of two round worms. The symptoms, temperature, rapid pulse and respirations, passed off two days before the ascarides were passed, as a result of administration of repeated doses of calomel. It was suggested by Dr. Walls that the localizing symptoms were due to ascaris, which caused obstruction, and the general symptoms were caused by their toxin, the elaboration of which ceased at their death probably two days before they were passed.

Dr. EASMON referred to a case of a somewhat similar nature which had been under his care in the Protectorate.

Dr. WALLS showed also a case of periosteal sarcoma of the tibia in a male Creole of 48.

There was a history of injury in April, 1922. In November an exploratory incision into a small swelling in the situation of the injury revealed organized blood clot. The wound healed, but a rapid increase of the swelling took place, and the skin broke down in the first week of January, 1923. By January 25th there was a large fungating growth. Two other cases shown by Dr. Walls were—(1) a child with a sequestrum of blackened bone three inches long projecting upwards from the middle of the tibia, and (2) a boy aged 7 years who had a foreign body (a piece of laterite) in the external auditory meatus necessitating post-aural incision of the cartilaginous meatus.

[1] *Report of Uncinariasis Commission to the Orient, 1915–1917*, p. 110.

Reports of Societies.

DIET, DENTAL STRUCTURE, AND CARIES.

AT a meeting of the Odontological Section of the Royal Society of Medicine on March 26th, Mr. W. R. ACKLAND presiding, Mrs. MELLANBY gave an account of some of her later work on the relation of diet, dental structure, and caries.

Mrs. Mellanby said that finality in this investigation had not yet been reached; until dental caries could be produced in living animals in such a way that each factor could be controlled and tested in turn, the exact etiology of this defect must remain obscure. The new evidence she had to bring forward related to the resistance of the teeth to caries after their eruption as evidenced by the production of secondary—or, as it was sometimes called, adventitious—dentine of different types. In her previous work, which she briefly reviewed, the main principles brought to light were the importance of a certain factor, which might be described as vitamin A, in the formation of the teeth and jaws and in resistance to infection, also the importance of other factors in the diet in relation to this first factor, and, again, the importance of the diet of the mother during pregnancy and lactation. Although vitamin A was important, yet it was only one link in a long chain, and the amount of this factor which was necessary in order to maintain normal conditions depended on the amount of other factors in the diet. If, for example, two puppies were fed on exactly the same deficiency diet save for the single difference that to one was given double the quantity of cereal that the other received, the one which received the additional cereal would grow more rapidly than the other, and the condition of the teeth would be worse.

Recently she had carried out an examination on 302 deciduous teeth of children, which had yielded the following results:

	No. examined.	Well formed; no Caries.	Normal Structure; Caries.	Hypoplastic:	
				No Caries.	Caries.
Incisors	47	34	5	—	8
Canines	29	1	—	12	16
First molars ...	88	1	5	1	81
Second molars...	133	—	1	—	137
	302	36	11	13	242

Thus 84 per cent. of these teeth showed a hypoplastic condition on microscopic examination, and over 90 per cent. were in absolute agreement with the theory of a direct relationship between structure and caries.

In trying to find a reason for the exceptions, she was struck by the varying types of secondary dentine seen in the sections. In a number of the 11 cases of carious teeth which were well formed, the secondary dentine was badly formed, with interglobular spaces, and in another case where the structure was good the pulp was found to be filled with cementum so that it could not resist the onset of caries. An analysis showed:

		Good Secondary Dentine.	Bad Secondary Dentine.	No Secondary Dentine or no Reaction.
Structure normal:				
Caries	11	—	8	3
No caries	36	23	8	5
Structure abnormal:				
Caries	242	15	130	97
No caries	13	9	2	2

Apparently in the large number of carious teeth with abnormal structure which showed no secondary dentine the onset of caries had been so rapid that there was no chance of

secondary dentine formation. Secondary dentine which was formed when the diet was good contained no interglobular spaces; that formed when the diet was bad did contain such spaces. Secondary dentine was formed by attrition or in response to an attack of caries, and in the latter event it might be that the secondary dentine was formed so quickly as to allow no time for good formation, or else that the diet was not good enough to permit of such good formation. There was at least some evidence that those conditions which produced good enamel and primary dentine were just those conditions which brought their influence to bear upon the teeth after eruption. The diets which produced normal teeth in puppies were also those which enabled the animals to resist bacterial infection. If there was an outbreak of distemper or mange those animals which were receiving cod-liver oil, suet, whole milk, butter, or similar foods, survived; and if they got the disease—as they did sometimes—they got it in a mild form. The deciduous teeth of children which resisted caries, although the enamel and primary dentine were defective, were found generally to have normal secondary dentine. These investigations were still in progress, and new points were emerging continually. Some critics of the work rather took up an attitude which could be justified if—but only if—claims to absolute truth had been made. What she had so far elicited was only part of the story; much more information was needed before dental caries could be fully understood.

Mr. J. H. MUMMERY said that structure was evidently not the only condition to be considered in regard to caries. There were teeth of very defective structure which were not subject to caries. There was some other associated factor in addition to structure. He thought it must be concluded that the enamel was not altogether out of the pale of vitality. There was something in the permeability of the enamel which was not yet fully comprehended.

Mr. F. W. BRODERICK said that Mrs. Mellanby had previously shown that diet did affect dental enamel, but he thought that diet could not be the sole agent. He believed that there was a connexion between endocrine derangement and susceptibility to caries or to pyorrhoea. W. B. Cannon had shown that in certain emotions, including anger and fear, also in hunger and pain, the activity of the suprarenal was increased, and amongst other results there was an increase in the calcium salts in the blood. He thought it could be said that that calcium was definitely a part of the alkali reserve, and that in threatened acidosis the calcium salts would be taken to neutralize the blood, so that under those circumstances the salts would not be available for their ordinary purposes—for example, hypercalcification of the enamel after eruption. He regarded the association of the periods of liability to acidosis, endocrine derangement, and susceptibility to pyorrhoea or caries as not entirely fortuitous. Endocrine derangement, whether brought about by vitamin starvation, by infections or toxaemias, by inherited instability, or by the emotions, would be likely to lead to dental caries or to pyorrhoea, as the case might be.

Mr. A. T. PITTS said that two years ago he read a paper describing his findings with regard to deciduous teeth. Out of something like 4,000 children he found only some 15 cases of visible (that is, macroscopic) hypoplasia; now Mrs. Mellanby said that out of 300 teeth she found 84 per cent. to show this defect on microscopical examination. This gave rise to the question as to what was normal enamel and what was the significance of the interglobular spaces, as to which opinions might differ. As to secondary dentine it was well known that its formation was normally the product of the human pulp, but whereas it was sometimes laid down as the result of a normal physiological stimulus, in other cases, as in caries, it was laid down as the result of a pathological stimulus. The character of the stimulus must affect the nature of the secondary dentine laid down. The dentine laid down as the result of attrition was better than the dentine laid down in response to caries. It seemed to him in the present state of knowledge with regard to the subject to be a little hazardous to argue that the character of the secondary dentine as laid down in caries could be correlated with the diet. It was only rarely that he himself found anything wrong with the diet, yet many mothers when bringing their children said that the teeth came through decayed. That was not so, of course, but it always seemed to him that imperfection of structure must be a very strong predisposing cause in these cases of premature caries. He did not think that carbohydrate stagnation was the controlling factor.

Mrs. MELLANBY, in reply, said that so little was known about the functions of the endocrine organs that it was difficult to base any theories as to the production of caries on something which itself had so little foundation. She also remarked that, as the result of attrition pure and simple, one might get good or bad secondary dentine with or without interglobular spaces.

EPIDEMIOLOGY OF SURFACE DISEASES OF THE EYE.

AT a meeting of the Section of Epidemiology of the Royal Society of Medicine, held on March 23rd, Mr. BISHOP HARMAN read, by invitation, a paper on the epidemiology of surface diseases of the eyes. Epidemics were now, he said, rare and of mild character; this was not always so. After the Napoleonic wars Europe was ravaged by what was known as Egyptian ophthalmia. A remarkably clear account of this as it affected English troops was given by Dr. John Veitch, surgeon to the 54th Foot. In a time when the influences of miasma, effluvia, and the like were held to be the causes of such affections, he recognized that direct contagion was responsible, and that both he and other officers were immune even when they examined cases with lenses with foci of one inch, provided there was no direct communication of matter. He also abolished barrack towels and substituted individual towels and daily washings with separate basins. The disease was a severe purulent conjunctivitis. He noted that gonorrhoea was rife amongst the affected men, and that the subjects of the disease were liable to a succession of urethritis, purulent ophthalmia, arthritis, and iritis. In these days they had to rely upon the massed figures of endemic cases to show the influences of various conditions upon these diseases. He dealt with five conditions—social, age, sex, seasonal, and the influence of other epidemics. Social conditions were dominant, because these made the distinction between clean and less dirty, and dirt was found to be directly associated with liability to conjunctivitis. By several methods of examination of hospital cases and school children this point was made abundantly clear.

With rare exceptions conjunctivitis was much more common in infancy than in school age, and cases got fewer during adult years. This was especially true of purulent conjunctivitis. Blepharitis did not appear until the third year, when measles was rife, and phlyctenulae had a maximum at the fifth year, when the mouth was septic from the decay of the milk teeth. Angular conjunctivitis did not appear until the teens for the most part, and it was most common amongst the elders. Despite these exceptions there was clear evidence that infants were more susceptible to conjunctivitis than grown-ups, probably because they revelled in dirt. Females were more liable than males. The second quarter of the year, with the onset of the strong drying winds of March, was marked by the peak of incidence of conjunctivitis. Epidemics of the exanthemata were responsible for much conjunctivitis and for the initiation of many cases of chronic blepharitis, but in all cases there was evidence of lack of personal care as an aggravating feature. Phlyctenular conjunctivitis had been held by some to be a tuberculous affection. He found, however, that these eruptions had a seat of election, the lower and outer quadrant of the limbus, which had as a nerve supply the second division of the fifth, which also supplied the upper teeth. Further, the majority of cases were rapidly cured by simple ointments, one-half of all in one week, and only a fraction (one thirty-second) became chronic, extending for months and years. In these few there might be a paratuberculous relation. The mass he believed to be herpetiform eruptions set up by oral and nasal irritation in the poor and ill fed. It was remarkable that a certain alien people whose food was richly impregnated with oil rarely suffered from the disease, yet they lived in the same quarter of London and suffered from dirt conjunctivitis in excessive proportion. Finally, he pointed out that exanthemata were responsible for a considerable share of blindness amongst school children, to the extent of one-fourth the total due to ophthalmia neonatorum. In these surface diseases of the eyes dirt and disease were remarkably associated, and education and the improvement of the standard of cleanliness must be looked to for the prevention of their ravages. The past showed immense advances in this direction.

The PRESIDENT said they recognized that ophthalmic work was remarkable for its precision, but he did not know until

he had heard Mr. Bishop Harman's paper how well it could show the effects of social conditions.

Sir WILLIAM HAMER said he was greatly interested in the story of the suppression of barrack towels by Vetch, and wondered if there were any similar experience in the late war. The greater liability of girls to these diseases of the eyes was paralleled in many other conditions.

Dr. DUDFIELD remarked that there were increasing notifications of ophthalmia neonatorum, but blindness arising therefrom was less. He discussed the influence of flies and dust as the cause of seasonal variations of conjunctivitis. Dr. E. W. GOODALL doubted whether warmth was really a favouring influence for dirt as Mr. Harman had suggested in reference to the Egyptian figures. Dr. MAJOR GREENWOOD commented upon the slowness with which clear conclusions upon the nature of disease became common property. The exposition of John Vetch on purulent ophthalmia was so clear that it would seem certain of acceptation, yet it took years to become widely known.

The meeting concluded with a vote of thanks to Mr. Bishop Harman for his paper.

HYPERTHYROIDISM.

A JOINT meeting of the Sections of Medicine and Surgery of the Royal Academy of Medicine in Ireland was held on March 16th, with Dr. H. T. BEWLEY (in the absence of the President, Dr. T. G. Moorhead) in the chair, when the SECRETARY read a paper, written by the President, to initiate a discussion on the subject of hyperthyroidism, its diagnosis, varieties, and treatment.

Dr. Moorhead reviewed the existing knowledge of the subject, and referred to the frequent association of persistent thymus with enlargement of the thyroid. Mental factors such as frights were undoubtedly often associated, and he gave details of two such cases in his own experience. The possibility of gastro-intestinal infection as an etiological factor was also mentioned. As regards diagnosis, he thought that the gastro-intestinal symptoms of hyperthyroidism were those most likely to be overlooked, but mistakes sometimes arose from neglect to examine the patient properly. In obscure cases a determination of basal metabolism would decide. Lymphocytosis occurred in simple goitre, and was valueless as a test. Tachycardia was, in his opinion, the most constant sign; loss of weight was also very important. The association of Graves's disease and myxoedema in the same patient was sometimes, though rarely, found. As regards prognosis, gain of weight and diminution of tachycardia under treatment were favourable signs, but in cured cases the goitre and the exophthalmos frequently persisted. He was strongly opposed to surgery in the treatment of the condition, and held that medical treatment, with *x* rays, would cure the great majority of cases with more certainty and safety than surgery. His own routine and technique were carefully detailed, and the results were claimed to be entirely satisfactory.

Sir WILLIAM WHEELER said that his interest had been stimulated by a visit to the late Dr. Kocher of Berne on three different occasions, and subsequently by watching the operative work of Mayo and Crile. He believed in the surgical treatment of cases of hyperthyroidism, as recent advances had made operations safe, and the mortality was almost negligible. He was of opinion that there were really only three types of goitre. The first was the colloid, seen in young girls, with full symmetrical neck, associated sometimes with extreme nervousness, and difficult to distinguish from hyperthyroidism. The basal metabolic rate was the only sure method of differentiation. Furthermore, this was the one type of goitre which responded to treatment with iodine, or its derivatives, or with thyroid extract. The second type was the adenomatous goitre; in these cases operation might be delayed, in consideration of the importance of the thyroid gland in adult life; but it should be remembered that adenomata frequently became toxic after a period of fourteen to sixteen years. Toxic goitre should be referred to as Plumer's disease; these cases differed in many respects from Graves's disease, and were more dangerous, as they gave rise to more certain degenerative changes in the viscera. In the third type were the hyperthyroid cases, which were regarded in a general way as Graves's disease. He was inclined to depreciate *x*-ray treatment on the grounds that if the dose was too big myxoedema followed, and if too small the patient had a relapse. If surgery became necessary after *x*-ray treatment, it was complicated by the production of fibrous tissue and adhesions. The only fatal case which he had come across was a case of adenomatous goitre, which at the time of operation was thought to be non-toxic, but the patient died suddenly from myocardial degeneration. He pointed out that by a measurement of the basal metabolic rate the nature of this case would have been recognized; this test was not only of sure and certain diagnostic aid, but was a definite index to the result of treatment.

Sir JOHN MOORE said that he was physician to a girls' school at which there were about sixty pupils, and not a year passed but some of these girls were brought to him suffering from more or less enlargement of the thyroid gland. These patients did very well when treated for anaemia, and when moderate doses of thyroid extract were given systematically. In the early stages of ordinary goitre and of exophthalmic goitre he was of opinion that if the patient was made to rise, with a fixed neck, from the recumbent position it would almost certainly empty the thyroid gland.

Dr. A. A. MCCONNELL thought that the treatment outlined by the President was more surgical than medical, as the essential part of it seemed to be that he destroyed the glandular tissue by means of *x* rays. The question seemed to be, Was it safe to treat cases by gradual destruction of the glandular tissue by *x* rays, or was it better to treat them at once by operation?

Dr. W. C. MACFETRIDGE said that the causation of exophthalmos was one of the most interesting points in connexion with cases of hyperthyroidism. There were a number of views put forward to explain the protrusion of the eyes, and the one most commonly held was that it was due to excess of fat in the orbit. He thought there were several objections to this view. Exophthalmos came on very suddenly, and he had heard physicians say that they had seen patients in which it had come on acutely. He personally had known one case which had been caused by the patient weeping all night over the death of her father. The exophthalmos, he believed, disappeared after death, and if this were so it could not be due to excessive fat in the orbit. *Post-mortem* examinations in these cases were rare—in sixteen years there had only been three deaths in Guy's Hospital from exophthalmic goitre. It was curious if an abnormal amount of fat should develop in the orbit, while at the same time emaciation took place in the rest of the body.

Dr. G. E. NESBITT thought that *x*-ray treatment was capable of almost mathematical accuracy. It undoubtedly destroyed the glandular tissue, but neither it nor surgery made any attempt at getting at the underlying factor of the cause of this disease.

Dr. H. T. BEWLEY said that he had noticed the frequency of cases of colloid goitre, and he did not believe that they were cases of hyperthyroidism. He did not agree with the President regarding the persistence of the exophthalmos, as he had seen several cases which had been cured, and the exophthalmos had disappeared altogether. Regarding treatment, he thought that cases of the extreme kind should be treated, at first at any rate, by rest, sedatives, and *x* rays. Cases of medium severity he thought were best treated by surgery.

ECONOMICS AND PUBLIC HEALTH.

AT a meeting of the Society of Medical Officers of Health held on March 16th, with the President, Dr. T. EUSTACE HILL, in the chair, Dr. R. J. EWART read a paper entitled "The economic circumstances of the country as a whole, and the various rates by means of which health is measured."

He dealt in the first instance with the relationship of man to his bacterial environment, and suggested that the economic revolution of the nineteenth century was dependent on the control of small-pox. He supported his argument by numerous references to the reaction of certain populations to organismal changes, amongst which he included the disappearance of the economic surplus in the Northern States of Italy due to the introduction of syphilis in the year 1500, and as a consequence the close of the Renaissance. Passing from this theme the nature and peculiarities of the economic revolution of the nineteenth century were discussed, and the author seemed to be of the opinion that foreign trade was the best measure of its progress. This was shown to be capable of division into—first, a fluctuation measured by the percentage number of trade unionists employed from year to year, and secondly, a general steady upward trend as measured by the amount of food and other necessities of

life consumed per head of the population on what could be taken as an alternative of the value of real wages. After discussing in some detail the probable origin of fluctuation of prosperity the author compared by means of graphs the relationship between fluctuation in employment, value of real wages, and the death rate from certain causes. The conclusions arrived at may be briefly stated in the following manner. The change in the epidemiology of scarlet fever which occurred about the year 1850 would seem to have been due to the migration of whole families from town to town, according to industrial necessity. Previous to 1830 areas or towns seemed to react independently, afterwards the county reacted as a whole. The high degree of immunity at present attained was stated to be due to this cause. Dr. Ewart suggested that the changes in infantile mortality were due to variations in the bacterial content of the food supply. The rise previous to 1899, when a fall was expected, was said to depend on the deterioration of the milk supply, itself dependent on the increased time of transport, and the fall after that date was the replacement of this contaminated fluid by the milk product. The sex ratio at birth also seemed to be dependent on economic factors. It was stated that the influence of the food supply on the germ plasm naturalized the differential sex death rate before birth. Should, however, a sudden change occur in that community, these two factors become separated, and an excess of boys or girls arose according to the existing conditions. Referring to the general death rate, he laid stress on the fact that this was unaffected by fluctuation in prosperity, but was closely associated with the value of real wages. He explained this as being dependent on the Poor Law, which was so adapted as to maintain the health of the community during periods of depression, without interfering with its economic life. Lastly, Dr. Ewart expressed his opinion that the liberal food supply at the present moment was the main factor upon which the favourable state of the public health depended, but that the means adopted was interfering with the economic life of the community, and, as a consequence, the value of real wages might come down. He pointed out that if such did happen the general and phthisis death rates would rise, but that the infantile mortality would not be affected.

Reviews.

INJURY AND RECOVERY.

PROFESSOR W. J. V. OSTERHOUT, in his monograph *Injury, Recovery, and Death in Relation to Conductivity and Permeability*,[1] sets forth a number of highly interesting conclusions that he has arrived at after about fifteen years' study of the variations in conductivity that occur in plant tissues.

These conclusions are derived chiefly from measurements of the electrical conductivity of the seaweed Laminaria. The typical method employed was to cut out a hundred discs from Laminaria fronds, arrange them in a cylinder and measure the conductivity of the cylinder and the changes which occurred in the conductivity when the discs were immersed in salt solutions of varying composition. Electrical conductivity is a factor which can be measured with great accuracy, and by using a large number of discs of tissue the author has sought to exclude individual variations, and claims to have obtained results of an accuracy sufficient to justify mathematical analysis. "Throughout these investigations," he says, "the aim has been to apply to the study of living matter the methods which have proved useful in physics and chemistry."

The study of the elementary properties of living matter has undoubtedly reached a point from which the chief hope of advance lies in the application of the mathematical methods employed in physical chemistry; but it is equally true that it is only possible in exceptional cases to obtain with living matter results which are sufficiently accurate to make mathematical treatment profitable. The work of Professor Osterhout, however, seems to be of this exceptional character, and his conclusions relate to matters of fundamental importance.

An analysis of the curves of the rate of death and recovery of plant tissues has led the author to the conclusion that living protoplasm obeys the laws of chemical dynamics and that the differential permeability of cells, and hence their life, is dependent upon the concentration at the surface of the cell of an unknown substance "M." This substance, he thinks, is continually breaking down and is continually being renewed by the cell. Hence the life of the cell depends upon a series of catenary reactions which may be represented as O→S→A→M→B. The cell is in equilibrium when the rate of change A→M is the same as the rate of change M→B. When the tissues are placed in a solution of pure sodium chloride the permeability increases until death occurs, and this change is attributed to an inhibition of the change O→S→A, and an increase of the rate of change of M→B, in consequence of which the concentration of M steadily falls. Professor Osterhout shows that upon this assumption curves can be calculated which fit exactly the curves obtained in experiment. The greater portion of the book is devoted to the analysis, upon the lines indicated, of the curves obtained during the death of tissues and during their recovery from toxic influences, and the question of the mode of action of antagonistic ions is also analysed.

According to this conception life is a dynamic process depending upon the relative rates at which the different stages in a series of catenary reactions occur. This hypothesis promises to be fruitful, for by it the processes of death and recovery can be explained; it should be possible also to extend it to the study of the changes in irritability which cause rhythmic activity. A point of considerable importance is that a substance which acts as a member of such a chain of reactions may be of greatest importance to the organism, even though it is only present at any particular time in extremely small amounts.

The general conception that the death process occurs continually in the organism throughout life, and that death is only an acceleration of this process, has been frequently put forward before, but Professor Osterhout has for the first time advanced definite evidence in support of this conception.

Chapter V, which deals with the action of anaesthetics, is of special interest to medical science. The mode of action of anaesthetics is very clearly demonstrated; in low concentration they cause a decrease in the permeability of the cell, and this decreased permeability is reversible; in higher concentrations anaesthetics cause an increase in the permeability of the cell and this action is irreversible. Since complete reversibility is the most essential characteristic of the therapeutic action of anaesthetics, we are asked to conclude that the action of anaesthetics in therapeutic concentration is to decrease the permeability of living cells.

Owing to the diphasic nature of their action on permeability, the fundamental nature of the action of anaesthetics upon protoplasm has been a matter of dispute, and it is an advance to have the action of these drugs thus analysed quantitatively. Nearly the whole of Professor Osterhout's work has been done upon vegetable tissues, and considerable research will be necessary before it will be possible to say how far his conclusions are applicable to the more complex and more labile animal tissues; he has, however, provided a fundamental hypothesis for the behaviour of living protoplasm based upon mathematical laws, and this should provide a foundation for a large amount of interesting work. The monograph is concerned chiefly with Professor Osterhout's own work, which is more exact and complete than any other on similar lines; mention is made, however, of most other important work on these lines, and the book concludes with a selected bibliography of about 300 references.

HEART DISEASE.

THE appearance of a fifth edition of Dr. BROCKBANK'S book on the *Diagnosis and Treatment of Heart Disease*[2] so soon after the fourth speaks well for its popularity. On this occasion the author has taken the opportunity of altering the arrangement of some of the chapters and of making considerable additions to the text that have increased the number of pages by about one-half. It still remains, however, a small book and will be useful not only to students in their clinical work but also to general practitioners who are seeking a short statement. The first ten chapters deal with the ordinary

[1] *Injury, Recovery, and Death in Relation to Conductivity and Permeability.* By W. J. V. Osterhout, Ph.D. Monographs on Experimental Biology. Philadelphia and London: J. B. Lippincott Co. 1923. (Post 8vo, pp. 259; 96 figures. 10s. 6d.)

[2] *The Diagnosis and Treatment of Heart Disease: Practical Points for Students and Practitioners.* By E. M. Brockbank, M.D.Vict., F.R.C.P. London: H. K. Lewis and Co., Ltd. 1923. (Cr. 8vo, pp. xi+232; 22 figures, 3 plates. 6s. 6d. net.)

methods of physical examination, special attention being paid to auscultatory phenomena and the interpretation of the various murmurs that may be present. Some of the views expressed may not meet with universal acceptance, but the writer has the courage of his convictions and gives a reasoned opinion on all debatable points.

The chapter on cardiac irregularity is brief but practical. Two plates of electro-cardiograms have been used for the purpose of illustrating various defects of cardiac rhythm, but the aim of the writer is to explain the varieties rather than to discuss the analysis of graphic records. Probably one of the most useful chapters is that dealing with practical points in the treatment of cardiac disease, and we note here, as elsewhere in the book, that attention is directed to many matters which are often not sufficiently impressed on the student in other and larger textbooks, but which are of much value in actual practice. Other sections treat of septic endocarditis, auricular flutter and fibrillation, paroxysmal tachycardia, pericarditis, angina pectoris, the heart in school children, etc., while the closing chapter is devoted to examination for life insurance.

The additions which have been made to this book will increase its usefulness, and have made it very different from *Heart Sounds and Murmurs*, the title under which the first edition appeared in 1912. Any minor criticisms that we might have been tempted to make are more than outweighed by its many excellent qualities, and we are convinced that it will be much appreciated by an increasing circle of medical men who will find in it many practical hints. The students in the Manchester school should be particularly grateful to the author.

RADIOLOGY.

STILL another book is added to the increasing number published of late on the subject of the more recent methods of *x*-ray therapy. This one, under the title of *La Radiothérapie Profonde*,[3] is from the pen of ISER SOLOMON, radiologist to the Hôpital Saint-Antoine, Paris, who acknowledges in his preface his obligations to the two well known French authorities Drs. A. Béclère and Belot. By far the larger part of the book is taken up with instrumentation and physics, and very great stress is laid upon the point that the great advances in technique in recent years have only been made possible by the more precise methods for the measurement of *x*-ray dosage, and notably by the perfection of the iontoquantimeter. It cannot be said that there is anything new in this first portion, but the author deals with his subject in a simple and straightforward manner. The author first states the fundamental principles underlying the methods of deep therapy, and then enters into minute detail on the subject of the absorption of *x* rays; this chapter is illustrated by many tables. In the second chapter the apparatus designed for the production of these high-voltage currents is described, and tubes—the boiling water, the Lilienfeld, and the Coolidge tubes—and accessory apparatus are dealt with in succession. The third chapter discusses all the important methods and instruments for the more accurate measurement of dosage; the larger part of the space is taken up with the ionization methods and the various devices suggested by Lilienfeld, Szilard, Friedrich, and the author. All these methods are illustrated. Having given about one hundred and twenty pages to this part of the subject, the author dismisses the important question of the result of treatment in only thirty more. He deals first with what is termed "benign affections"—including fibromata of the uterus and allied conditions, tubercle, blood diseases, and maladies associated with the endocrine glands. The author agrees with Béclère that for uterine fibroids *x*-ray therapy is the treatment of selection, and that it gives better results than surgery, without any risks. The second and final part discusses the results of treatment of neoplasms; the author points out that, whilst it is impossible to accept the theory of one exact lethal dosage for the different types of malignant disease, undoubtedly the results of *x*-ray treatment have been much improved by the administration of larger and more uniform dosage; that in the treatment of cancer of the uterus the results are equal to those obtained by either radium or operation; and that intensive *x*-ray therapy must rank as one of the most powerful therapeutic agents in this disease.

[3] *La Radiothérapie Profonde.* By Iser Solomon. Paris: Masson et Cie. 1923. (Imp. 16mo, pp. 152; 40 figures. Fr. 9 net.)

WITHERBEE and REMER, under the title of *X-ray Dosage in Treatment and Radiography*,[4] give an account of the methods they have themselves used and developed during the past few years. The authors have had no experience of the latest treatment for cancer, using high voltages of above a ten-inch spark-gap, and their book deals with tubes working between a three- and ten-inch gap and at distances from the skin varying between six and twenty inches. In the first chapter, in which the unfiltered *x*-ray dosage is discussed, the principles of their method, based upon the four fundamental factors of the voltage, the milliamperage, the time, and the distance, are explained. *X*-ray burns in radiography are next considered, and it is shown that this method of estimating *x*-ray dosage is also applicable to the determination of the number of plates which can be taken without danger to the patient. There is also a chapter on filtered *x*-ray dosage, followed by short notes on the principles and the cause of *x*-ray burns. The remaining portion is allotted to the technique of treating affections of the throat and tonsils, and tuberculous glands, skin diseases, uterine fibroids, leukaemia, and Hodgkin's disease. As a whole the book is a simple account of the technique used by the authors, a technique which they consider easy to follow and safe for the patient. The book will be of especial value to those using an *x*-ray apparatus who have not yet acquired the special knowledge necessary for its safe use.

In the introduction to his book on the *x*-ray diagnosis of gastro-intestinal diseases[5] SCHLESINGER points out the importance of the conventional Continental view that the *x*-ray examination of the digestive tract should be regarded as an aid to the clinical examination. He indicates clearly that the *x*-ray examination, even under the most favourable conditions, can only present a fairly faithful outline of the interior of the organs examined—that is, if an opaque material is introduced into any part of the alimentary tract the picture obtained on the screen or plate will be a reproduction of the lumen of the structure, showing any irregularity of its lining walls, together with the movements and the position of the organ. It is clear that, if the examination be thorough, any departure from the normal may be revealed. The picture obtained may show a defect, and from the appearances of the defect it is possible to indicate a lesion, but the exact nature of the lesion can only be determined by exhaustive investigations in which the clinical examinations play an important part. For example, a defect in the stomach contour may indicate the presence of a chronic ulcer, a cancer of the stomach, an artefact, the presence of adhesions, an irregular contraction, or an extra-gastric lesion causing pressure effects. Schlesinger, therefore, throughout his book adheres to the principle of correlated diagnosis, and in our opinion this is the correct method. He, on the other hand, believes in the use of the direct method so general in America, and insists upon the point that the radioscopic and the radiographic are indispensable. The serial method is advocated in the routine examination, in which he employs a number of plates exposed at intervals. The book is illustrated chiefly by a large number of excellent diagrams; these are of great teaching value, and draw more clearly the attention to the diagnostic points than a number of radiograms. The latter, unless very well produced, fail to show the finer points in diagnosis. The diagrammatic method has a distinct value, more especially when the drawings are made by a worker whose experience is so great as that of Schlesinger. The book is a worthy record of the work of one of the pioneers in *x*-ray gastro-intestinal diagnosis, and as such should find a place in the library of all practising radiologists and teachers.

[4] *X-ray Dosage in Treatment and Radiography.* By William D. Witherbee, M.D., and John Remer, M.D. New York: The Macmillan Co. 1922. (Fcap. 8vo, pp. vi + 85; 4 figures. 8s. net.)

[5] *Die Röntgendiagnostik der Magen und Darmkrankheiten.* Von Dr. E. Schlesinger. Zweite, neubearbeitete Auflage. Berlin and Vienna: Urban and Schwarzenberg. 1922. (Sup. roy. 8vo, pp. vii+402; 228 figures.)

MATERIA MEDICA FOR DENTISTS.

MANY remember the days when "Materia Medica and Therapeutics" had their place as one of the early studies in the curriculum of the "Conjoint Board." When we had passed that first examination what knowledge was ours! what power against disease! There was a Latin name for everything, an antidote for every symptom. We had found an exact science! Disillusion followe when hospital practice revealed the far too frequent impotence of our drugs and the inapplicability of our knowledge. These were the thoughts and memories

awakened by a perusal of FRANK COLEMAN'S *Materia Medica for Dentists*.[6] Deodorants, antiseptics, astringents, counter-irritants, drugs innumerable! Has dentistry benefited by them? How many are used by the average dentist?

This is not written in disparagement of Mr. Coleman's work; on the contrary, we strongly recommend the book to every dentist; it is only that drugs have been disappointing, and the question arises as to how far the experienced dentist has travelled on the same road.

In this, the fifth, edition the pharmacological classification of drugs has been again followed, more information has been given on vaccine therapy and organotherapy, and short accounts of electro- and radio-therapy, vitamins, and delayed chloroform poisoning and other subjects have been added. An abstract of the new Act on the sale of poisonous drugs has been provided. On the other hand, the chapters on ionic medication and the bleaching of teeth have been curtailed. There are short but well written and instructive chapters on such specially dental subjects as mummifying agents and cleansing of the mouth and teeth; the latter includes a very good discussion on tooth powders, pastes, and washes which should not be without interest to the general practitioner.

Only occasionally is the author not quite clear, as in the repeated use of the word "solution" in explanation of colloidal solution, or in the presentation of the disadvantages of caustics. Occasionally, too, his opinion may be challenged, as for instance, that alcohol is a cerebral stimulant, or that purging should precede a general anaesthetic. Perhaps also the statement (quoted from Bruse) that "a natural mouth will be found to be quite free from food débris half an hour after a meal" may not meet with universal acceptance.

A fifth edition indicates an established position, and in our opinion the book well deserves its popularity. It is dedicated to Douglas Gabell and Harold Austin, the authors of the former editions.

PRACTICAL DERMATOLOGY.

PROFESSOR GOUGEROT'S work, *La Dermatologie en Clientèle*, favourably reviewed in these colums on its first appearance in 1917, has now reached its third edition.[7] This is the best evidence of a success thoroughly well deserved. The book is divided into two parts, the first devoted to general considerations of diagnosis and treatment, terminating with a most useful table of the principal external remedies, describing their action and giving the percentage strength in which they are used in their various preparations, solubilities, indications, and incompatibilities. The second part treats of the various affections of the skin. The new edition has been thoroughly brought up to date, and the last chapter, on "Dermatoses exagérées et simulées" (dermatitis artefacta), is most interesting. Much of it is founded on the author's experiences during the war, the influence of which is also seen in a previous chapter on the cutaneous complications of wounds. Another important subject, not usually dealt with adequately in text-books of dermatology, is treated in the chapter on "Dermo-épidermites microbiennes," the name given to those lesions due to streptococcic infection which simulate eczematous eruptions. First recognized by Sabouraud some twelve years ago, they frequently arose in the neighbourhood of infected wounds during the war. Their proper treatment was a matter of considerable importance. Nevertheless they have seldom been systematically described in works on the skin. Here they are given the prominence they deserve. Professor Gougerot possesses all the charm of style and incisiveness of expression we are accustomed to expect from our Gallic allies; his book is delightful to read and well arranged. The illustrations, which are very numerous, maintain the high standard set in the former editions. With few exceptions they give a very good idea of the condition depicted. Everyone interested in diseases of the skin should read Professor Gougerot's book, for in it will be found much that is stimulating and suggestive. The general practitioner will like to know that it is one of a series of manuals entitled "Comment guérir." Can he resist an invitation so seductive?

[6] *Notes on Materia Medica, Pharmacology, and Therapeutics for Dental Students and Practitioners.* By F Coleman, M.C., L.R.C.P., M.R.C.S., L.D.S. Fifth edition. Oxford Medical Publications. London: H. Frowde, and Hodder and Stoughton. 1922. (Cr. 8vo, pp. iv+308. 10s. 6d. net.)

[7] *La Dermatologie en Clientèle.* By H. Gougerot. Third edition. Paris: A. Maloine et Fils. 1922. (Cr. 8vo, pp. xi + 852; 210 figures, 77 plates. Fr. 35.)

NOTES ON BOOKS.

THIS small book on *Infantile Cirrhosis of the Liver*,[8] by Dr. S. K. MUKHERJI, gives an account of a disease that has received very little notice in medical literature. According to the author, it is a serious and not uncommon disease in infants in India, and is a clinical entity separate from other causes of jaundice in infants and young children. Castellani, on the other hand, doubts its claim to separate recognition, and suggests that it may be a form of kala-azar. The author gives a short account of forty-eight cases, forty-five of which occurred in the first two years of life. The features of the disease are slowly progressive jaundice, fever and constipation, with great enlargement of the liver, and moderate enlargement of the spleen; death usually occurs within three months of the onset. The liver, according to Gibbons, shows at first a fine intralobular cirrhosis, followed later by coarser interlobular fibrosis in which numerous bile ducts are prominent. The disease is apt to occur in successive children of the family, and specially affects Hindus: it is rare among Anglo-Indians. The author makes out a good case for further investigation.

Mr. SAMLER BROWN'S guide book, *Madeira, Canary Islands and Azores*,[9] now in its twelfth edition, contains the information tourists or invalids require about climatic conditions, steamship routes, fares, hotels, paths, and where the water is drinkable and where it is not; there are many excellent maps and illustrations. The historical notes are interesting, and there is a delightful chapter on the lost continent of Atlantis. The author states that the meteorological statistics compiled in the Cañadas and Izaña, Teneriffe, at an altitude of over 7,000 feet, are the first tabulated statistics to be published. The Spanish Government is building a sanatorium in the Cañadas, on a site 7,283 feet above the level of the sea, at a cost of £90,000.

To give a description of modern conceptions of constitution of the chemical atom is not a simple task: to do so in popular language is still more difficult, but the attempt is made by Mr. J. MILLS in a little volume entitled *Within the Atom*,[10] which the jacket informs us is a popular view of electrons and quanta. The non-scientific reader, we expect, will find it laborious reading. The author begins by trying to discard scientific terms, but as he progresses falls more and more into their use, so that he has found it necessary to add a glossary. The ramifications of the subject into many branches of physics and chemistry can only be followed by those who already have some acquaintance with these sciences. But if the matter should prove too deep for the non-scientific reader it will be perused with interest and advantage by many who, having a certain knowledge of physics and chemistry, still desire a better understanding of the mechanics of the atom.

We have received the first number of *Clinica y Laboratorio*, a new Spanish journal of medicine and surgery to be published monthly at Saragosa under the editorship of Dr. Ricardo Horno Alcorta. The first half of this issue contains original articles, and the second half abstracts from current medical and surgical literature. The original articles consist of papers on the treatment of jejunal ulcer following gastro-enterostomy by Dr. Urrutia, on auto serotherapy in pulmonary tuberculosis by Dr. Codina, on diverticula of the oesophagus by Dr. V. Fairén, notes on hydrocephalus by Dr. Galán, treatment of injuries of the soft parts of the cranium by Dr. Vidaurreta, diagnosis of acute appendicitis by Dr. Rivas, and a description of Heister's eighteenth-century treatise on surgery.

The title *Half-Past Bedtime*,[11] which suggests something between sleep and waking, aptly conveys the spirit of Dr. H. H. BASHFORD'S book of short stories for children. The delicate fantasy of the tales and the charm of the author's drawings (for he is his own illustrator) will be appreciated by young people of all ages. Each of the fourteen stories has its own picture, and the intervals between prose and picture are filled in with jolly little verses from the same gifted pen. It must be a great asset to a household to have a father who can do the whole thing "just so."

[8] *Infantile Cirrhosis of the Liver.* By S. K. Mukherji, M.B. Calcutta: Indian Medical Record Book Department. 1922. (Fcap. 8vo, pp. 95; 9 illustrations. Rs. 2/8.)

[9] *Brown's Madeira, Canary Islands and Azores.* By A. Samler Brown. Twelfth edition, revised. London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. 1922. (Cr. 8vo, pp xx + 358; illustrated. 7s. 6d. net.)

[10] *Within the Atom.* By J. Mills. London: Routledge and Sons, Ltd. 1922. (Cr. 8vo, pp. xiii + 215; 36 figures. 6s. net.)

[11] *Half-Past Bedtime.* By H. H. Bashford. London and Calcutta: G. H. Harrap and Co., Ltd. 1922. (Post 8vo, pp. 222; illustrated. 5s. net.)

THE SCHICK TEST AND SOME EPIDEMIOLOGICAL REFLECTIONS.

THE Report on the Schick Test, Diphtheria and Scarlet Fever, issued by the Medical Research Council,* was briefly mentioned last week. Its subtitle, "A Study in Epidemiology," is justified by its general tenor and by certain hypotheses put forward by the author, Surgeon Commander S. F. Dudley, R.N.

His practical observations were made in the Royal Naval School at Greenwich; the number of residential boys averages about 1,000, all of good physique, under constant medical supervision, and living under satisfactory sanitary conditions; in addition there are about 100 day boys who mix freely with the boarders at work and play and at some of the meals. The circumstances were favourable for the study of the origin and spread of infectious disease, and this report describes an exhaustive research in the two diseases diphtheria and scarlet fever as they occurred in this population.

The immunity condition of the school as regards diphtheria was first examined by means of the Schick intracutaneous test, which was found to be a very reliable method for ascertaining who are immune to diphtheria. The boys were grouped into three classes according to their reactions:

1. *Positive reactors* (susceptible to diphtheria).
2. *Negative reactors* (immune to diphtheria).
3. *Pseudo-reactors* (either susceptible or non-immune).

A certain amount of experience is necessary in interpreting pseudo-reactions; the report states that there will always be a few frankly doubtful reactions due to confusion caused by pseudo-reactions, but with repeated readings the error should not exceed 2 or 3 per cent. The transitory pseudo-reactions, although very variable in intensity, can be easily distinguished from the specific Schick-positive reactions, and are due to an anaphylactic or allergic condition of the skin caused by previous contact with diphtheria bacilli. The positive and pseudo-reaction combined is often an intermediate stage in the development of immunity; it may be of only a few months' duration, and therefore indicates recent contact with diphtheria bacilli. It does not hold that all individuals who give a Schick-positive reaction are equally susceptible to diphtheria; they may possess a certain amount of resistance and be immune to ordinary doses of diphtheria bacilli, only contracting the disease when heavily infected. A negative reaction is to be attributed to diphtheria antitoxin in the blood, and may be due to previous disease or to previous recognized or unrecognized contact with virulent diphtheria bacilli. Second attacks of diphtheria are not common, and it is concluded that "one attack of diphtheria confers immunity in the vast majority of instances, even if the Schick reaction remains positive."

Diphtheria Carriers.

Some valuable information was obtained concerning diphtheria carriers. The swabbing of the throats of the whole population revealed the fact that diphtheria may spread in an institution when the carrier rate for virulent diphtheria bacilli is as low as 1 per cent. Whereas carriers of avirulent diphtheria bacilli may be either positive or negative reactors to the Schick test, carriers of virulent diphtheria bacilli always give a negative Schick reaction. In view of the fact that any inflammatory condition of the throat renders the subject more likely to be a carrier, the diagnosis of diphtheria can only be regarded as certain when virulent diphtheria bacilli are isolated, the Schick reaction is positive, and a characteristic pseudo-membrane is present. Should any of these characters be absent or unknown, "the diagnosis is no longer a certainty, but becomes a matter for debate, to be settled according to the prejudices of the clinician or laboratory worker." It is obvious that the clinical characters are the most important factors in diagnosis: for practical purposes bacilli indistinguishable morphologically from diphtheria bacilli may be considered virulent if the culture comes from a clinical case. But in unselected healthy subjects bacilli morphologically identical with diphtheria bacilli may be avirulent in 60 per cent. of cases.

No relation was found to exist between diphtheroids of the Hoffmann type and true diphtheria bacilli. A study of the distribution of cases of diphtheria in the dormitories of this institution showed that the spread of bacterial infection takes place more frequently in the sleeping quarters if the distance between the beds is small.

Mode of Spread: Penholders as Fomites.

Scarlet fever and diphtheria spreading in the same environment show striking similarities, but there is no reason to suppose that there is anything in common between their biological causative agents. Early in an epidemic, before the number of immune individuals is numerous, scarlet fever spreads directly from case to case, but it is probable that diphtheria spreads by chains of contact carriers from case to case. In both diseases the chief mode of spread is undoubtedly from one individual to another, but convincing evidence is adduced that fomites, such as penholders which boys have sucked and which are used as common property, can under certain conditions act as an indirect cause of the spread of scarlet fever and diphtheria. Virulent diphtheria bacilli were isolated from penholders which had been sucked by boys harbouring these organisms in their mouths. The results of repeated Schick tests on the population of this school, kept as it was under constant medical supervision, have shown that during an epidemic many individuals may become immune to diphtheria without showing any symptoms. The same applies to scarlet fever and probably to other diseases as well.

"*Velocity of Infection.*"

To explain the fact that far more infection took place in the dormitories than outside them the author has propounded a principle termed "velocity of infection." He argues that in many infectious diseases there is a certain minimal dose of infective agent necessary to cause the disease, and that a smaller dose is destroyed by the defensive mechanisms of the body.

> "If a subject receives a number of subminimal doses which, when totalled, exceed a minimum infective dose, it is reasonable to suppose that it must depend on the rapidity with which these fractional doses are received as to whether or not he falls a victim to the disease in question—that is to say, as to whether the rate at which the doses of infective agent can be dealt with is greater than the rate at which they are received."

The velocity of infection is therefore the resultant of (1) the velocity at which a subject receives doses of a pathogenic agent, and (2) the velocity with which the immunity mechanisms of the subject can destroy this infecting agent.

This principle of the velocity of infection is held to explain the puzzling fact that there were no cases of diphtheria or scarlet fever amongst 100 day boys who played, worked, and ate with the boarders for over a year, yet 300 of the boarders with whom they mixed developed one or other of these diseases. During the day the immunity mechanisms were able to neutralize as rapidly as received the occasional doses of infective agent, to which it is assumed all were exposed; the conditions existing in the dormitories at night allowed of the continuous bombardment with infected droplets of saliva, so that the velocity at which the infective agent was received was greater than the velocity with which it could be destroyed by the mechanisms of resistance. This principle, it is thought, may account also for the development of immunity without symptoms and explain other difficulties in practical epidemiology.

During an epidemic of diphtheria many boys increased their resistance to diphtheria without manifesting any symptoms and without even developing recognizable antitoxin in their blood. There took place, therefore, a coincident "epidemic of immunization" among those who never even permitted a multiplication of the subinfective doses of the biological agents of the epidemic to which they had been exposed. At the same time there occurred an epidemic of contact carriers in the school. The author concludes that the information which may be derived from the consideration of this "epidemic immunity" should "soon do away with the necessity for postulating unknown mysterious influences as factors in an epidemic constitution."

* Medical Research Council, Special Report Series No. 75. H.M. Stationery Office, or through any bookseller, 1s. net.

DR. GEORGE WILLIAM PATERSON, colonial surgeon, has been reappointed to be an official member of the Legislative Council of the Island of Grenada.

SOME 350 members of the American College of Surgeons, with their families, have sailed on a cruise to South America, which will occupy about two months. The purpose of the trip is the promotion of professional and social relations between the surgeons of the United States and those of Central and South America. Meetings and clinics will be held at the various cities, and the medical schools and hospitals will be visited. At Colon, Panama, the party will be present at the laying of the foundation stone of the Gorgas Institute of Tropical Medicine.

British Medical Journal.

SATURDAY, APRIL 7TH, 1923.

THE SCHOOL OF HYGIENE.

THREE weeks ago we took occasion to refer to the fact that decisions must shortly be taken which will necessarily affect the whole future of the School of Hygiene, an institution that ought to have a very great influence in determining the manner in which practical hygiene and the sciences upon which it rests shall be studied and taught in this country. The problems before the founders and governors of the new School of Hygiene are not easy of solution. When it is a question of starting a new venture there is commonly a temptation to discuss it in terms of persons rather than in terms of ideas; and it is true that the decisions of an appointing body must be guided largely by personal considerations, for it would be idle to prescribe the doing of such and such things unless persons able to execute the tasks could be produced. Fortunately we can ignore personal factors and need attempt only to indicate the general scope of the work and the ideas which, having regard to that scope, must dictate the choice of personnel. The subject, thus limited, may be considered from three aspects—the type of pupil, the ideal curriculum, and the professorial organization of that curriculum.

All the students of the school will be post-graduates, but the preliminary knowledge they will possess will vary much. If we provisionally classify the main groups of subjects expected to be taught we shall have (1) bacteriology, (2) chemistry and physics, (3) applied physiology and hygiene, (4) parasitology, (5) medical statistics and general epidemiology, (6) public health administration, and (7) tropical medicine. The majority of students who have just graduated in medicine may be assumed to possess a sound knowledge of the elements of (1) and (2), some acquaintance with the leading principles of (3), but no knowledge whatever of the remainder. A minority of entrants, small numerically but of great importance, will possess more than an elementary knowledge of some one of these branches, and will seek in that subject graduate instruction of an advanced type. Again, there will be some who, while starting on the same level as the majority, will wish to extend their knowledge of a particular branch beyond the average need. This inevitable heterogeneity of the student class will make the planning of the curriculum more difficult—and, of course, more interesting—than if the question were merely one of bringing a batch of elementary students up to a common standard. Nevertheless, in shaping the curriculum it will probably be necessary to give to the needs of the elementary students the first consideration, and the requirements of the General Medical Council for a Diploma in Public Health will naturally be a point of departure.

There is, however, no reason why the precise allocation of times—which are minimum requirements—in the Council's rules should be adhered to. There is, for instance—even if the existing examination schedules are maintained—good reason for rearranging the instruction in meteorology and climatology and in vital statistics and epidemiology. Physical and chemical meteorology should be associated in time with the course of chemistry and physics. The study of climatology is more appropriately deferred until the student has a grasp of medical statistics and epidemiology. The elements of vital and medical statistics should be taught contemporaneously with chemistry and physics. These elements are the tools the public health officer must employ in his daily work, and, although epidemiology is very far indeed from being a mere synonym for medical statistics, it is true that the main data of epidemiology are statistical in form and can only be utilized by a person familiar with the elements of statistical method.

The obvious danger to avoid is a watertight division between the two aspects of the course—the scientific, represented by Part I, and the technical, represented by Part II. Thus, in Part II we have the Principles of Public Health and Sanitation. In this course the student must learn the actual working of a very complex machine or set of machines; this instruction will be purely technical, but unless what may be called the embryology of these machines is understood, the reason why such or such principles of action have become established will not be appreciated. The embryology of the machines is written in the classical researches of the sanitarians of the nineteenth century; these pioneers employed various methods of investigation—clinical, bacteriological, statistical; the detailed study of their work must be co-ordinated with that of the methods of investigation, largely the theme of Part I. The rules make no provision for the study of applied physiology, owing, it must be supposed, to the lack of facilities for instruction in existing institutions. But it would plainly be wrong to discourage the development of a new and spaciously planned institution. It follows that the elementary curriculum of the school should cover the whole of the instruction needed to meet the minimum requirement and more besides. The additions should be very great under the heading of applied physiology, quite appreciable in the matter of medical statistics and epidemiology.

The next point to be made is that the bulk of the teaching must be practical—there must be as few formal lectures as possible. The General Medical Council has already imposed this stipulation in the teaching of bacteriology and chemistry. It is equally important in other subjects. To attend lectures on, say, the methods of statistics is, for the ordinary student, a solemn farce unless he performs under supervision all the statistical operations described. This requirement carries with it that of small classes; it is as easy to preach to sixty students as to six; no man can efficiently conduct a class on, say, the methods by which knowledge of the means of transmission of diphtheria was acquired, with many more than six students, because such a class ought to be arranged on what has been called the *Seminar* system. The professor issues beforehand a list of the original authorities, each member of the class is expected to study an arranged portion of the literature and to come to the class prepared to give a critical account of what he has studied. This account is discussed and the students are made to feel that they are collaborators in an investigation, not mere sponges or transcribers of notes. Of course the method presupposes a certain intellectual maturity in the students, an assumption which can safely be made in post-graduate institutions.

The fascination of good public health research has not even yet been properly appreciated; textbooks of hygiene and preventive medicine are dull. But they ought not to be dull. We all love detective stories; there is a steady sale for reprints of criminal trials. It is fascinating to unravel the skeins in which human lives are involved. But there is as much human interest in the story of the great epidemic of typhoid at Maidstone, in following up, criticizing, and amplifying in the light of more recent information the evidence submitted at the public inquiry, as in trying to decide exactly how Palmer

poisoned Cook at Shrewsbury seventy years ago. The public health annals of this country are full of such instances—not many perhaps on so large a scale, but many of equal interest. One of the causes of dullness in these matters is the attempt to cover too large a field, an attempt the didactic lecturer or the writer of an examination textbook feels bound to make. A careful study of a series of local epidemics of any one disease, the professor acting as the chairman of a group of researchers, would be both more interesting and far more educative than a session of formal lectures on the whole field. The system of instruction in a post-graduate school of hygiene should be penetrated with this idea. If the soundness of this principle be accepted, then it must influence the professorial organization. Administrative convenience will require that the number of full professors should be small, but each professor should regard himself rather as the chairman of a group, *primus inter pares*, than as an old-time lecturer with demonstrators.

Such are the general principles which, we venture to submit, the system of the new school should embody. We hope that it will give a sound general education to all its students, and facilities for special, more advanced and technical, instruction to some, but that in all departments instruction and research will mutually assist one the other. We do not wish to see either a mere machine for enabling youths to pass certain examinations or a temple of esoteric study and academic research.

PHOTOSYNTHESIS AND SEA AIR.

JUST eighty years ago Morren found that in the surface sea water near St. Malo the amount of oxygen was greatest and the amount of carbon dioxide smallest in bright weather, but the statement seems to have attracted no attention until recently, when the experiments of the late Professor Benjamin Moore on photosynthesis and the results of the prolonged studies of Sir William Herdman, in which Moore shared, on the plankton[1] of the Irish Sea, combined to awaken wide interest in the fact that seasonal variations of vegetation in the sea are determined by the seasonal variations of the amount of sunlight. From an examination of the records of fifteen years (1907–21) Herdman states[2] that there can be no question about the fact. There is always a great increase of the phytoplankton during the early spring: the first to multiply are the diatoms, which begin very rapidly to increase during the first fortnight of March, and reach a maximum in April or May, or at latest in June; at the time of their maximum hundreds of millions may be taken in one haul. About a month later come the dinoflagellates, and then the copepods (entomostracous crustaceans), which reach their maximum numbers at some time between June and October. The copepods devour the diatoms; young fish, and some adult fish, devour the copepods; the increase and distribution of fish thus depend in some measure, possibly a very large measure, on the number and distribution of the copepods and therefore indirectly on the number and distribution of diatoms. This relation is emphasized by the fact that many larval fishes feed on the diatoms directly; Herdman has found the stomach of the infant plaice full of them. In nine out of thirteen years the diatoms became abundant just before the very young plaice were set free, which happened in the first half of March, but in four years the diatoms were late and the young fishes hatched in due time may not have found enough to eat. Fish hatched too early (February) seem always to run some chance of being starved.

All the investigations made on photosynthesis are in accord in establishing that the process is properly so termed and that it is due to light, not warmth, although, other things being equal, its velocity increases as the temperature rises. The general principle is illustrated by the phytoplankton of the Irish Sea, for in March, when its great spring increase begins, the temperature of the water is still low.

In a recent paper[3] Dr. William Butler and Mr. J. H. Coste have reported some observations on the seasonal variations in the dissolved oxygen content of the water of the Thames estuary, made in the course of a public health investigation for the London County Council. The starting point was the discovery, during the summer of 1914, that the water of the Thames estuary contained a proportion of oxygen greater than was required for saturation with atmospheric oxygen of water of the observed degree of salinity. This is spoken of as supersaturation. May and June were the months in which it was greatest, but the degree varied very much; in 1918 the maximum (June) was 177.5 per cent., in 1922 (May) only 116.3. The lowest degrees of supersaturation were observed in January, February, and March, and are within the limit of experimental error. The spring rise seems to be sudden, as the maximum may be reached in May, but unfortunately very few estimations were made in April. The plankton of the Thames below Southend, where the estuary may be said to begin, has not been fully studied, but Mr. E. T. Butler began a regular microscopical examination of the sediment from the water in July, 1921, and by September, 1922, had accumulated observations which are in general agreement with those of Herdman on the other side of England; he made rough estimates monthly of the numbers of diatoms, light green growths, and dark green (or blue) growths. He found that the diatoms and the light green growths began to increase rapidly in May, reached maxima early in July, and then rapidly decreased. What appears to happen is that the green growths and diatoms, stimulated by the sunlight, break up the carbonic dioxide, fixing the carbon and liberating the oxygen, which escapes only very slowly if the water be still. This is the condition to which the term "supersaturation" is applied, not perhaps quite happily, because it refers to the amount taken up from the atmosphere of the air, whereas from an atmosphere of pure oxygen nearly five times as much would be dissolved. The fact, however, serves to explain why the oxygen liberated by the growing vegetation does not at once escape. As the carbon dioxide is used up by the growth of the minute sea vegetation the water tends to become less and less acid, and in one set of observations made near the mouth of the Thames it became alkaline early in April; the alkalinity increased to a maximum at the end of June and then began to decline. It seems probable that this increase of alkalinity will cause sea water to take up more carbon dioxide, and that this increase, used up by the growing organisms, will lead to the production of more oxygen.

The fact that in still water oxygen is very slowly liberated is not of much practical importance, because sea and estuary water are seldom still, and even gentle stirring greatly increases the rate of loss of oxygen by sea water. When waves are breaking, the excess of oxygen is very rapidly got rid of; in fact, the amount dissolved may fall below the saturation point. As Butler and Coste point out, the seas during the spring, and perhaps during the autumn also, are a great natural factory where free oxygen is produced on a scale which,

[1] *Plankton* = a collective name for all the forms of floating or drifting organic life found at various depths in the ocean, or, by extension, in bodies of fresh water (*N.E.D.*). Phytoplankton = the vegetable part of the plankton.

[2] Linnean Society's *Journal*—Botany, xlvi (1922); *Nature*, March 31st, p. 448.

[3] *Biochemical Journal*, xvii, No. 1 (1923), p. 43.

having regard to the relative areas of sea and land, may conceivably exceed that of land vegetation. "It is tempting," they continue, "to speculate on the part played by oxygen thus liberated in producing the salubrity attributed to sea air." The seas breaking on the shores "are liberating their surcharge of oxygen in its most active state, and it is seen that not the chemist, or the marine biologist alone, is interested in a phenomenon which has for its theatre of operations vast tracts of oceans and the littorals of continents."

However this may be, the observations are undoubtedly very interesting, though they fail to account for the rapid fall in vegetation and in the surcharge of oxygen during July and August in these latitudes. The sun is above the horizon as long in July as in May, and there is a rise in the temperature of the sea which is believed to favour photosynthesis.

THE TRAFFIC IN DANGEROUS DRUGS.

REPORTS recently issued by the League of Nations relevant to the enforcement of the International Opium Convention of 1912 indicate that that body is "making haste slowly" with the mondial control of drugs of addiction. The Advisory Committee which met for the fourth time in Geneva in January was specially invited to deal with a suggestion emanating from the Assembly of the League—namely, to boycott all exports of the scheduled "dangerous drugs" from non-adhering countries such as Turkey, Persia, Switzerland, and the Argentine. Further consideration of this suggestion, however, indicated that there were lions in the way. It was pointed out that a not impossible result of its adoption might be to give to India a virtual monopoly of the legitimate export trade in opium and that the total amount of the world's production of opium might even be thereby increased. Moreover, as the recalcitrant countries were reported to be showing signs of grace—indicative of a willingness to ratify the Convention—the further consideration of this question was postponed till the next meeting in May, when it was hoped a convenient occasion for a review of the whole situation would be afforded. The system of requiring licences or certificates in respect of all imports of the drugs in question, which is but a corollary to the stipulations of the Opium Convention, has as yet been adopted by only twenty-seven of the fifty-one States which are members of the League of Nations; and a large number of the member States have neglected to furnish the statistics, which they were requested by the Council to supply, showing the amount of opium, morphine, heroin, and cocaine produced, consumed, imported, and exported by each country. A Joint Subcommittee of the Health and Opium Committees has given further consideration to the difficult problem as to what amount of the several drugs may be deemed to be legitimately required for internal consumption in each country, and also to the best methods of arriving at the quantity of each used for medicinal purposes. A previous attempt by the Health Committee to solve the question yielded inconclusive results. The Joint Subcommittee, after a detailed discussion, resolved, apparently by a majority of three to one, that the medical and pharmaceutical use of these drugs should be considered the only legitimate use, and that medical opinion did not regard the use of opium as a stimulant, even in tropical countries, as legitimate. The Opium Advisory Committee in its report to the Council recorded with particular satisfaction the participation of the United States in its labours by the nomination of a representative to act in "an unofficial and consultative capacity." American opinion has recently been reawakened on the subject of the drug traffic by a resolution of the House of Representatives, introduced by Mr. Porter, requesting the President to urge upon certain Governments "the immediate necessity of limiting the production of habit-forming narcotic drugs and the raw materials from which they are made to the amount actually required for strictly medicinal and scientific purposes." In this resolution the Governments of Great Britain, Persia, and Turkey are specifically referred to as regards the cultivation of the opium poppy, and Peru, Bolivia, and the Netherlands as regards the production of coca. Evidence recently given by medical men and social workers before the Foreign Affairs Committee of the House of Representatives has emphasized the great increase in the illicit use of habit-forming drugs in the United States of recent years—more especially of heroin—and the depravity and crime attributable to this nefarious traffic.

THE THEORY OF VISION.

IN a paper read a short time ago before the Royal Society of Arts Dr. F. W. Edridge-Green contested the orthodox theory of vision put forward by von Kries and others, and very widely accepted, which supposes that the rods in the retina are sensory cells like the cones, and that, whereas the cones are used in the daytime for the appreciation of colour, the rods are used at night, when the light is so dim that colour cannot be appreciated. Dr. Edridge-Green disagreed with this duplex theory, as it is called, and held that there was no evidence that the rods are sensory. He maintained that they are accessory and are the sensitizers of the cones, secreting the visual purple which is changed by light. There was, he thought, good reason to believe that the means by which light stimulated the nerve endings was through a photochemical reaction; the decomposition of a photochemical film, sensitized by the visual purple, stimulated the ends of the cones, and a visual impulse was set up which was conveyed through the optic nerve fibres to the brain. He maintained that the function of the rods was to regulate the supply of visual purple to the film in accordance with the amount of light falling upon the eye, and expressed the opinion that this theory of vision not only explained all the known phenomena, but enabled various other facts to be predicted. The theory which supposed the rods to be percipient elements for perception in dim light, while the cones were the percipient elements in daylight, he believed to be irrational, for it was difficult to conceive an element stimulated by the decomposition of a photochemical substance which was excited by weak light and not more strongly excited by a brighter light. This theory was supported by what he described as misstatements. One of these was that certain animals had only cones and others only rods; he had made numerous examinations but had never found any animal with only cones or only rods. The creature which was most commonly said to have cones only was the tortoise, but the rods in the retina of the tortoise were as clearly defined and distinct as in the human retina. It was also said that the periphery of the retina was colour-blind; this was not the case when colours of sufficient intensity were used, as anyone could test for himself with a red lamp, which he would find could be seen as red to the extreme periphery. The statement that the eye was totally colour-blind in dark adaptation was also ill founded, as was proved in a masterly paper Burch had communicated to the Royal Society (*Proceedings*, vol. 763, p. 199). Yet another misstatement was that the Purkinje phenomenon and the recurrent image were not found at the fovea. Altogether it was difficult to comprehend how vision could occur on this theory. How were the central connexions in the brain arranged in order to obtain localization, with a large scotoma in the most important part of the field of vision? Professor E. H. Starling, who presided, said that Dr. Edridge-Green's theory was consistent with known physiological facts, and was therefore worthy of thorough investigation. The orthodox theory was brought forward with great authority by men of the intellectual magnitude of von Kries and others, but its weight of authority was really a disadvantage, because it caused the theory to be accepted unquestioningly. All such theories should be divested of the authority of the men who gave them birth and the facts regarded *de novo*. By physiological facts he meant such as could be observed sometimes on animals, more often on oneself.

OXFORD OSLER MEMORIAL.

CONSIDERABLE progress has been made in the plans for a memorial to Sir William Osler in Oxford, where he was for fifteen years Regius Professor of Medicine. At a recent meeting of subscribers, Sir Archibald Garrod, speaking on behalf of the Committee, put forward certain proposals which he said had the entire approval of Lady Osler, as well as of other friends from whom letters had been received. The first proposal was to place in the University Museum a bronze portrait plaque of Sir William Osler, a replica of that made for the Medical Faculty of Maryland by Vernon of Paris. A second proposal was to establish an Osler Memorial Medal in bronze, to be awarded every five years to a graduate of the University of Oxford who has made some distinguished contribution to medical science, learning, or practice. It was decided to use the remainder of the sum contributed for an Osler Travelling Fund for the propagation or acquisition of medical knowledge or for medical research. The intention is to invest the fund and to use the interest to assist teachers of the Medical Faculty to travel for these purposes. The sum in hand, however, is not adequate, amounting only to about £1,700, and further subscriptions are invited. The motion to adopt these proposals was seconded by Major-General Sir Frederick Bradshaw, K.C.B., A.M.S.; it was carried without dissent, and the Executive Committee, which consists of Sir Herbert Warren, President of Magdalen College (chairman), Sir Archibald Garrod, F.R.S., Sir Charles Sherrington, P.R.S., Professor Arthur Thomson, Mr. Dodds-Parker (honorary treasurer), and Professor J. A. Gunn (honorary secretary), was empowered to carry the proposals into effect, and to negotiate the necessary arrangements with the University. Further subscriptions should be sent without delay to Mr. A. P. Dodds-Parker, 2, Holywell, Oxford.

CONJUGAL TUBERCULOSIS.

DR. PAUL ROUSSEL has issued an interesting account of the statistical information he has obtained from an inquiry into the frequency of tuberculous infection amongst families of the poorer classes at Nancy, and in particular with regard to conjugal tuberculosis.[1] He prefaces the account of his own observations by a review of the results and conclusions of others as recorded in the literature, and a discussion of his own conclusions on the basis of the immunity afforded by mild, repeated infection during childhood. His statistics concern a homogeneous working-class group, living generally under bad social conditions, which has come under the care and supervision of the Villemin Dispensary since its foundation in March, 1920. They comprise altogether 423 families in which either one or both of the married persons were suffering from tuberculosis. In 211 cases the husband alone, and in 163 cases the wife alone, was affected, while in 49 cases both partners were attacked. Examining these 49 cases of concurrent disease, he found that in 27 of them the possibility of conjugal infection could be dismissed. There remained, then, 22 instances to be explained, and in these direct contagion appeared certain or highly probable in 14 and possible in 8. Taking the former figure, it is seen that the proportion of cases of conjugal transmission of tuberculosis may be given as 5.2 per cent. The smallness of this estimate shows how comparatively slight is the danger of such transmission. But, further, it was found that of these 22 accepted cases no fewer than 15 were latent. In fact, in only 4 individuals out of 423 married couples did a rapid type of disease result from the intimacy contingent on the married state. Of the 22 cases referred to, it is interesting to note that in as many as 18 of them the infection was from husband to wife. The length of cohabitation before the disease manifested itself was from six months to twelve years and in 4 instances it did not commence till after the death of the primarily infected partner. Dealing only with open cases of tuberculosis having a positive sputum, the proportion of cross-infections was raised to 11.56 per cent. Excluding 85 families who were without offspring, it was found that in 25.02 per cent. of general cases and in 37.59 per cent. of open cases the children were tuberculous. These figures are probably on the low side, as simple cases of adenopathy were not included, unless they were accompanied by definite evidence of tuberculosis in the lungs or elsewhere. Summing up, then, it may be said that conjugal infection is uncommon, even in the poorer classes, and that when it does occur it is generally only after a lengthy period of cohabitation, that the wife is more likely to suffer than the husband, and that the disease usually runs a benign course. The danger to the children, however, is so serious that, in the event of the marriage being fruitful the very greatest care must be exercised by a rigid—albeit humane—system of prophylaxis to prevent their early and fatal contamination.

[1] *La tuberculose conjugale: contagion et mariage.* By Dr. Paul Roussel. Paris: A. Maloine et Fils. 1922. (Roy. 8vo. pp. iv + 140. Fr. 10 net.)

HOSPITAL ALMONERS.

THE Institute of Hospital Almoners carries on a branch of social work of which the late Sir Charles Stewart Loch was the founder; it has its offices in the house of the Charity Organization Society, Denison House, 296, Vauxhall Bridge Road, S.W. The institute selects and trains suitable candidates for the work of hospital almoners, grants certificates and diplomas, keeps a register of trained almoners, and co-operates in preventing the abuse of hospitals and in promoting health amongst the industrial and poorer classes. The report for 1922 points out that the sphere of activities of a hospital, a general hospital in particular, is wider than might at first sight appear, for the welfare of the patient is influenced by the educational and public health authorities, by war pensions committees, and many other organizations. Further, the records of the almoners on the social and economic conditions of the patients are proving of statistical value, and during the past year an almoner has been engaged by the Medical Research Council for special investigations into the records of the social work done during the past seven years at St. Thomas's Hospital and the neighbouring Lying-in Hospital in York Road. Evidence of the care displayed in selection is afforded by the fact that over 40 per cent. of the candidates who apply for training are rejected as unsuitable. The training lasts for at least two years, and includes four months' work in an office of the Charity Organization Society in London, and nine months under the direction of the Ratan Tata Foundation of Social Science and Administration; there follows eleven months' work under an almoner at a hospital training centre, two of them being spent in visiting other hospitals, and one in practical work outside the hospital—for example in infant welfare centres, rescue homes, and tuberculosis clinics. The fee for the training, covering the whole course of lectures and instruction, is 40 guineas. In the membership of the institute are included the almoners of a number of the larger hospitals in London and the provinces. The President is Sir Napier Burnett, M.D. The report lays stress on the special qualifications required in an almoner, such as a generous education, a wide outlook, and broad sympathies, so that she may become "the link between the hospital and the home." This view of the almoner's duties is emphasized by a quotation from an article in *The Hospital*, stating that "too much attention was at first directed merely to one of the almoner's functions—the exclusion, namely, of the unsuitable recipient of charitable help, but this . . . has now fallen into its rightful place as a comparatively subordinate matter." The council of the institute finds it difficult to estimate what demand there will be for almoners two years hence, but it feels that not enough women are entering upon the work to fill the vacancies that are likely to occur.

EPIDEMIC HICCUP.

FOLLOWING the recognition of encephalitis lethargica attention has been called, especially in France, to epidemic hiccup. Its etiology is obscure, but epidemiological and clinical data suggest that it is related to encephalitis lethargica, as it often

occurs in the course of that disease; the two appear contemporaneously in the same districts, and the diaphragmatic spasm may be regarded as a manifestation or variant of the myoclonic form. Rosenow, of the Mayo Clinic, who in 1921[1] produced spasms of the diaphragm in monkeys and rabbits inoculated intravenously and intracerebrally with a streptococcus isolated from pus obtained from the tonsils of patients with epidemic hiccup, now carries this research farther.[2] Intracerebral injections with dead streptococci and filtrates of cultures were found to give rise to spasm of the diaphragm, the duration of symptoms being shortest after the injection of filtrates, longer after the introduction of dead streptococci, and most persistent after the inoculation of the living organisms. The streptococcus is similar to the diplo-streptococcus, which he described in 1916 in encephalitis lethargica and recently identified microscopically in or adjacent to the lesions in a series of 21 cases of epidemic encephalitis[3]; it belongs to the pneumococcus-streptococcus group of organisms normally present in the upper respiratory tract. It was recovered from the experimental animals and produced spasm of the diaphragm and other muscles in further animals but symptoms of lethargic encephalitis became more frequent and diaphragmatic spasm less common with the number of animal passages; it therefore appears that the peculiar localizing power or *neurotropic* property of the hiccup streptococcus is acquired and perhaps a phase in the life cycle of the pneumococcus-streptococcus group of organisms. The symptoms were permanently controlled by anti-encephalitis serum in an animal inoculated by a strain of streptococcus which was specifically agglutinated by the serum. The central nervous system of the animals showed perivascular infiltration, in early stages with leucocytes, later with mononuclear or plasma cells. The streptococcus produces a chemical substance, and the persistence of hiccup depends on the continued production of this substance in the central nervous system or elsewhere. That the impulse producing the spasm is of central origin is shown by the observation that heroin, a depressant of the respiratory centre, controls the spasms. This may possibly be of service in practice, for morphine has generally been found to be the most successful of the numerous drugs tried in obstinate hiccup, and it has been stated that in epidemic hiccup nothing is effectual in stopping the paroxysms, though pressure upon the eyeballs has been said to be successful.

PLUMBISM AND LEAD PAINT.

IN 1911 Home Office Departmental Committees recommended the total prohibition of the use of paint containing more than 5 per cent. of its dry weight of a soluble lead paint except for certain special purposes. At the third conference of the International Labour Organization of the League of Nations, held at Geneva in October and November, 1921, a draft convention was presented to which the British Government took exception, stating that it had reason to doubt the conclusions reached by the committees in 1911, and was making further inquiries. The conference eventually adopted almost by unanimity a convention inviting the various countries represented to bring into force, six years from the date of the conference, regulations prohibiting the use of white lead or lead sulphate for interior painting, except in the case of railway stations and factories where lead painting may be considered necessary by a competent authority. The British inquiry referred to was committed to another Home Office Departmental Committee presided over by Sir Henry Norman, M.P. This committee has just presented its report. The committee was instructed to examine the question of the danger to the health of workers in the painting trade, and inquire into the questions of comparative efficiency and cost. The committee reports that it is satisfied that for outside painting and for certain kinds of internal painting there is at present no efficient substitute for lead paint, and that the prohibition of lead paint for certain purposes is likely to involve an increase of cost. The committee at the same time recognizes that the statistics of lead poisoning arising from lead paint, in its production and in its use, are sufficiently serious to make it desirable to limit its employment as far as possible, and to make it subject, where used, to statutory regulations; the British regulations for trades concerned in the production of lead and its use as a glaze in pottery have worked well, and there are none superior to them in any country. New regulations are necessary only for painting and the rubbing down of old paint. As regards white lead and lead sulphate, and paint bases containing these substances, the committee considers that the needs are adequately met by the agreement reached at the Geneva Conference and subsequently embodied in the convention adopted there. Legislation will be necessary to give effect to the principles contained therein, and the committee agrees that the prohibition of the use of white lead and lead sulphate for internal painting should not come into force until 1927 as the convention prescribed. It is suggested, however, that regulations to deal with the continued use of lead paint should be brought into force at the earliest possible moment. An important practical point is that the committee accepts the view that lead poisoning among painters is almost entirely caused by dust produced in dry rubbing down, and that dry rubbing down is no longer necessary and can be replaced by a damp process. It therefore advises that the dry rubbing down process should be prohibited, and expresses approval of a draft code of regulations drawn up by the Home Office in collaboration with representatives of the Painters' and Decorators' Industrial Joint Council, and unanimously accepted by both sides of that Council and also by the National Federation of Building Trades Employers.

[1] Rosenow, E. C.: *Journ. Amer. Med. Assoc.*, Chicago, 1921, lxxvi, 1745.
[2] Idem: *Journ. Infect. Dis.*, Chicago, 1923, xxxii, 41-94.
[3] Rosenow and Jackson: Ibid., 1923, xxxii, 144.

THE ROYAL SOCIETY OF MEDICINE.

WE have already called attention to the institution by the Royal Society of Medicine of an order of Associates. The action of the Society seems to have escaped the attention of some of those eligible, for we understand that very few applications have been received. Any qualified man or woman, whether British or otherwise, is eligible to be elected an Associate within five years of obtaining a first professional qualification. The annual subscription is three guineas, but there is no admission fee, and an Associate who has paid three annual subscriptions does not pay an admission fee on election to the Fellowship. Associates are entitled to all the ordinary privileges of Fellows, but may not borrow more than one volume at a time, and do not receive the *Proceedings* gratis.

THE Chartered Society of Massage and Medical Gymnastics which was formed by the amalgamation of the Incorporated Society of Trained Masseuses and the Institute of Massage and Remedial Gymnastics (Manchester), received its charter in June, 1920, and numbers amongst its objects the improvement of the training, education, and professional status of persons engaged in the practice of massage, medical gymnastics, electrotherapeutics, and kindred methods of treatment; the promotion for such persons of a uniform curriculum and standard of qualification, and the maintenance of registers of persons qualified in the opinion of the society to practise or teach the practice of these forms of treatment. Members are required not to undertake any cases of massage except under the direction of a registered medical practitioner; not to advertise except in recognized medical and nursing papers; not to sell goods to patients in a professional capacity; and not to accept secret commissions on the sale of goods. The society has now issued its first register of members covering the period from July, 1920, to September, 1922; it contains the names and addresses of over 4,500 masseuses and masseurs in the United Kingdom and abroad. The possession of additional certificates (as in medical electricity and gymnastics) is indicated, and a place index adds considerably to the usefulness of the main register. There are separate sections for masseuses and masseurs.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

THE House of Commons adjourned on March 30th until Monday, April 9th. The following are notes of the business of medical interest done during the last three days before the adjournment, and of some other matters, which we were compelled to postpone last week owing to pressure on space.

The Cost of State Relief.

Sir Walter de Frece asked, on March 20th, the aggregate amount per head of the population now distributed by the State for various services and insurances. The Chancellor of the Exchequer replied that the amounts per head of the population distributed in 1922-23 in Great Britain on the services stated were estimated to have been approximately as follow:

	s.	d.
Unemployment benefit	19	6
Poor Law relief	19	0
Old age pensions	10	0
Service and kindred pensions, including the pensions of school teachers and the police ...	13	6
War pensions	30	0
Health insurance benefits	11	0

The figures included not only money provided from taxes and rates, but also, in the case of the health and unemployment insurance schemes, contributions by employers and employed. Separate figures were not available for uncovenanted unemployment benefit.

Dangerous Drugs Regulations.

In reply to Dr. Molloy, on March 29th, the Home Secretary, Mr. Bridgeman, said he proposed to make a regulation revoking No. 1 of the amending regulations made on October 2nd, 1922, under Section 7 of the Act. [This provided for the insertion of the words: "The prescription shall not be given for the use of the prescriber himself."]

Imports of Dangerous Drugs.

The Home Secretary, on March 28th, gave the following statistics of the importation of dangerous drugs in the years 1920 and 1921, mentioning that the only figures for 1920 were those of the Customs' officials, and were incomplete. For 1921 the figures of return prepared by the Home Office were available.

In 1920 there were imported into the United Kingdom 423,530 lb. of opium, 320 oz. of morphine, and 7,227 oz. of cocaine. These amounts were made up by consignments from various foreign countries and British possessions as follows:

Opium.—France, 130 lb.; Turkey (European), 210,377 lb.; Turkey (Asiatic), 122,713 lb.; Persia, 3,910 lb.; other foreign countries, 2,370 lb.; British India, 82,966 lb.; Hong Kong, 820 lb.; other British possessions, 244 lb.

Morphine.—United States of America, 320 oz.

Cocaine.—Germany, 2,368 oz.; France, 2,083 oz.; Switzerland, 1,000 oz.; Peru, 1,424 oz.; other foreign countries, 352 oz.

In 1921 the total amounts of these drugs imported were: Opium, 58,161 lb.; morphine and morphine salts, 1,100 oz.; cocaine and cocaine salts, 24,663 oz. The amounts consigned by various countries were as follows:

Opium.—Greece, 8,348 lb.; Italy, 339 lb.; Persia, 1,246 lb.; Spain, 176 lb.; Switzerland, 848 lb.; Turkey (European and Asiatic), 45,079 lb.; other countries, 2,125 lb.

Morphine and Morphine Salts (including morphine content of preparations and admixtures).—France, 1 oz.; Switzerland, 870 oz.; Turkey, 229 oz.

Cocaine and Cocaine Salts (including cocaine content of preparations and admixtures).—France, 19,955 oz.; Germany, 2,073 oz.; Greece, 61 oz.; Holland, 2,544 oz.; United States of America, 30 oz.

Mortality from Cancer.—Dr. L. G. Molloy asked, on March 28th, what was the death rate from cancer in Great Britain at the present time; what was the death rate from this disease in the previous four decades; what proportion of deaths from all causes other than accident or violence were due to this scourge; and what financial provision was made by His Majesty's Government towards assisting those engaged in fighting this plague by endeavour to ascertain its causes and the best means of combating its ravages. Mr. Chamberlain replied that the standardized death rates from cancer in England and Wales in the four decades 1881-1890, 1891-1900, 1901-1910, and 1911-1920, and in the year 1921 were respectively 610, 767, 867, 966, and 1,007 per million of the population. In England and Wales the cancer deaths during the above decades represented 3.2, 4.3, 6.1, and 8 per cent. of the total deaths from all causes other than those due to accident and violence. The promotion of cancer research was among the purposes for which an annual subsidy was made by Parliament to the Medical Research Council, and the Council from time to time made grants in aid of investigations which might bear on the incidence, causation, and treatment of cancer. The Council also had in its charge a quantity of radium salt belonging to His Majesty's Government, and with this had organized an investigation into the treatment of cancer by means of radium in ten different hospital centres in this country. Dr. Molloy was no doubt aware that an extensive research into the causes of the disease had for some time past been undertaken by the Imperial Cancer Research Fund.

War Pensions Act Amendment Bill.—Mr. Frederick Roberts, on March 21st, introduced on behalf of the Labour party a bill to provide that where an ex-service officer or man, after leaving the service, was found suffering from tuberculosis, neurasthenia, or any other disease or incapacity reasonably attributable to war service, acceptance for such service should be taken as proof of attributability unless or until the contrary was proved. In other words, the measure proposes that pensions should be granted unless the Ministry of Pensions can prove that the illness be not attributable to war service, the onus of proving the negative to be placed on the department. The bill was read a first time.

Assessment of Pensions.—Mr. Ponsonby asked, on March 22nd, whether the Minister of Pensions had received complaints from the Handsworth branch of the British Legion as to cases in which local medical boards were alleged to have contradicted the decision of the Pensions Appeal Tribunal when it had been in the applicant's favour, and whether the Appeal Tribunal could, at the time of the hearing of an appeal, assess the disability so that the Ministry of Pensions could make the award accordingly. Major Tryon said that the complaint was based upon a misapprehension, for decisions of the Pensions Appeal Tribunal were invariably accepted. An assessment tribunal might, in confirming the finality of the award, increase or reduce it, or might simply decide that the case was not ripe for final decision. This did not necessarily mean that the tribunal disagreed with the rate at which the man's disablement had been assessed, and steps were being taken to make this clear in announcing decisions of this nature. Major Tryon has stated that, in cases of disability accepted by the Ministry as due to war service, pension was always awarded at the rate appropriate to the degree of disablement certified by the medical board by whom the man was examined. If a claim was based on deterioration the man was referred for examination by a medical referee, not for an assessment for pension purposes, but for a preliminary expression of opinion on the merits of the claim. If the medical referee reported the claim the man was then examined by a board, whose assessment was accepted and acted upon, whether higher or lower than the estimate given by the medical referee. The Ministry granted an allowance to carry on. The total number of four-year cases submitted in Great Britain and Ireland for consideration for final award under Section 4 (2) of the War Pensions Act, 1921, was 48,180, and the percentage recommended for final awards was 58.4. The total number of medical practitioners on the panel from which members of medical boards for the Glasgow area were drawn was 172, of whom 85 per cent. were ex-service doctors. The number of pensions to officers is approximately 28,500, representing an annual value of about £3,100,000. During the year ending February 1st, 1923, some 30,000 pensions to officers were reviewed, after medical re-examination as required by the warrant. Of these, 67 per cent. remained unaltered or were increased, while 33 per cent. were decreased or terminated, The result of these changes represented a net decrease in the annual value of the awards reviewed of approximately £345,000. The first part of the Handbook of War Pensions is now ready.

Pensions Appeals.—Major Tryon has stated that approximately 1,400 appeals by officers and 70,000 appeals by other ranks were decided by the Entitlement Tribunal during the two years ended December 31st, 1922. The percentages of these appeals allowed were 48 per cent. and 56 per cent. respectively. Of awards which have become final the Pensions Department up to December 31st, 1922, made 153,000 of *nil* or less than 20 per cent., and 40,000 of 20 per cent. and over. Up to the same date approximately 13,050 appeals against final awards were decided by the Assessment Appeals Tribunal. In 62 per cent. the final award was confirmed unaltered; in 19 per cent. the final award was confirmed at a higher assessment; and 19 per cent. were set aside by the tribunal. The number of cases within each of the last six months in which medical advisers of the Ministry of Pensions have declined to accept the mental derangement of applicants as due in any way to or exaggerated by war service were: September, 34; October, 16; November, 57; December, 34; January, 52; and February, 58. The Minister said that he was satisfied that this type of case received most sympathetic consideration. There was, moreover, statutory right of appeal to a tribunal independent of the Ministry.

Service Patients in Asylums.—Captain Craig stated, on March 20th, in reply to Mr. Frederick Roberts, that by arrangement with the Board of Control a systematic inspection of all "service patients" in asylums had been carried out for some time past by medical inspectors of the Ministry of Pensions. Considerable progress had been made with arrangements recently initiated for treating the more hopeful type of certified case in separate institutions specially equipped for service patients. Where, however, a relative, in exercise of his powers under the lunacy laws, insisted on the removal of a patient against the advice of a medical superintendent, it was the practice to point out to the responsible relatives that, should application be made for the readmission of the patient to the asylum (which experience showed frequently happened), the question of reissuing family treatment allowance must be considered afresh. This was a reasonable procedure, which was exercised with the greatest discretion, and solely in the interests of the patient's treatment, and in no way conflicted with the provisions of the Lunacy Act. Asked the cost of maintenance of

the 700 ex-service men outside the scope of the Ministry of Health, now in lunatic asylums, Major Tryon said he understood the present average cost of maintenance of such patients in a county or borough asylum was 24s. a week. The number of ex-service men classed as service patients and paid for by the Ministry of Pensions who were in mental hospitals in England and Wales on January 1st last was 4,532.

Venereal Disease, Child Welfare, and Mortality.—Mr. J. Wheatley (a Labour member), on March 20th, put an argumentative question as to the comparative expenditure by Scottish local authorities on the treatment of venereal disease and upon child welfare schemes. Dr. Elliot (Parliamentary Under Secretary for Health for Scotland), replying, said that the estimate for 1922-23 by the Scottish Board of Health provided for grants amounting to £65,000 for treatment of venereal disease, and to £120,000 in respect of maternity service and child welfare schemes. In the six months ended November 30th the Corporation of Glasgow expended £15,955 on venereal disease treatment, and £18,000 on child welfare. Mr. Wheatley asked whether the Minister thought that the victims of disease contracted through the folly of the diseased person was morally entitled to the same consideration from the State as the innocent victims of poverty; but the Speaker remarked that this matter could be discussed on the estimates.

Maternity and Child Welfare in Scotland.—Dr. Elliot stated, on March 21st, in answer to Mr. Wheatley, that the number of mothers medically certified in Glasgow during the thirteen weeks ended March 10th, as requiring additional nourishment on grounds of health was 2,261; the number of infants similarly certified was 5,871, or 8,132 cases in all. Of these 7,787 were granted free supplies after investigation, 193 were granted supplies on part payment and 152 were refused, mainly on the grounds that the family income was adequate to provide additional supplies; 70 of the infants were certified as suffering from malnutrition and 5,202 from debility, underweight and kindred ailments. It was not possible to say how far, if at all, these conditions were the result of poverty, and how far due to congenital causes or to improper feeding. The Government had limited but had not withdrawn the grant for the feeding of mothers and children under schemes of maternity service and child welfare. The amount of the reduced grant was sufficient for the normal requirement of the scheme, the primary purpose of which was the prevention and treatment of illness and the instruction of mothers and not the relief of distress. He was unable to hold out any hope of increase in the amount available for the current year.

Gratuities for Dental Officers.—Dr. F. E. Fremantle, on March 22nd, asked if gratuities granted by Army Council Instruction 131 of 1919, had not been allowed to be retained by dental surgeons who, at the conclusion of their temporary service, entered the permanent service notwithstanding the fact that their form of contract was identical with that of contract medical officers by whom gratuities had been retained; and whether this anomaly would be rectified. Lieut.-Colonel Guinness replied that the contract for medical officers specifically provided for a gratuity, which was not included in the contract for dental officers. The gratuity under Army Council Instruction 131 of 1919 was an act of grace, and the conditions attaching to its refund in the event of any recipient being granted a permanent commission were similar to those generally applicable to officers. The contract for medical officers placed them in an exceptional position. The Minister could hold out no hope that the decision carefully and exhaustively considered would be modified.

Royal Army Medical Corps.—Dr. Fremantle asked, on March 22nd, what number of candidates competed for appointments to the Royal Army Medical Corps at the last examination; what number of vacancies were advertised; how many candidates passed the examination; how many received commissions; and the main reasons for the dearth of candidates. Lieut.-Colonel Guinness said that fifteen vacancies were advertised for which four candidates competed and were all successful, subsequently receiving commissions. The examination, the first since 1914, was unavoidably held at the very short notice of one month. Before entering into speculations as to other reasons and remedies for the dearth of candidates, it would be best to see what were the results of the examinations held under more favourable circumstances.

Drunkenness Amongst Young People.—Mr. Bridgeman, at the instance of Mr. Willey, on March 20th, gave the following figures of convictions for drunkenness amongst young persons as shown in comparative groups for the years 1919 to 1921: There were two convictions among males under 16 years of age in each of the years 1920 and 1921; no convictions among females under 16 in any of the three years dealt with. Of persons between the ages of 16 and 21, in 1919 there were 2,383 convictions among males, and 227 among females; in 1920, 3,815 males and 248 females were convicted; and in 1921, 2,049 males and 123 females.

Ambulance Services in London.—Mr. Briant inquired, on March 21st, as to alleged frequent delays in the removal of persons by ambulance after street accidents in London to hospitals; whether persons in a critical condition were sometimes taken to an institution where they were refused admission owing to the lack of vacant beds; and if further co-ordination between the ambulance and hospital or infirmary authorities could be obtained by which daily reports of accommodation available could be supplied. Mr. Chamberlain said that cases of delay undoubtedly occurred but he had no evidence that they were of frequent occurrence. He had referred the suggestion to the Voluntary Hospitals Commission with a request that it should be brought to the notice of King Edward's Hospital Fund acting as the local Voluntary Hospitals Committee for London.

Statistics of Nystagmus.—At the instance of Mr. Barker, on March 26th, Lieut.-Colonel Lane-Fox gave the following information as to the number of cases of nystagmus year by year from 1910, omitting the years 1915-18, for which particulars were not available:

Year.	No. of employed below ground.	Number in receipt of compensation.		No. of Compensation Cases per 1,000 persons employed below ground.
		New Cases.	Total Cases.	
1910	834,751	956	1,618	1.94
1911	819,421	1,374	2,518	2.96
1912	835,119	1,376	3,195	3.69
1913	895,857	2,401	4,550	5.09
1914	835,266	2,774	5 992	7.17
1919	953,992	2,718	6,449	6.90
1920	973,586	2,865	7,028	7.22
1921	908,066	1,913	6,717	7.40

Government Lymph Establishment.—On the request by Mr. T. Thomson, Mr. Chamberlain gave the following particulars showing the number of calves vaccinated at the Government lymph establishment during certain periods mentioned in the question:

January 1st to June 30th, 1903	256
January 1st to June 30th, 1920	242
January 1st to June 30th, 1921	144
July 1st to December 30th, 1921	93
January 1st to June 30th, 1922	48
July 1st to December 31st, 1922...	177
January and February, 1923	161
Total 1,121	

Venereal Disease Statistics.—Mr. Chamberlain, at the request of Mr. Burgess on March 27th, gave the following statistics of persons dealt with at the treatment centres for venereal disease in England and Wales during the last five years; they included persons who applied for treatment but were found not to be suffering from venereal disease. Separate figures for males and females are not available for 1918 and 1919:

	Males.	Females.	Total.
1918	—	—	58,000
1919	—	—	128,692
1920	103,567	40,367	143.934
1921	114,692	4',808	165,500
1922	114,632	47,684	162,316

Bristol University.—Mr. T. Davies asked, on March 28th, whether in consequence of the Wilts County Council reducing its yearly grant to Bristol University by the sum of £1,000 in 1923 a similar amount would be stopped from the Exchequer grant. Major Boyd-Carpenter replied that while he should regret any reduction of the university grants by any county council at a time when universities in general were in great need of local support, he would not propose in the circumstances of this particular case to make a corresponding reduction in the annual Treasury grant.

Answers in Brief.

Mr. Chamberlain stated, on March 28th, that he understood that certain negotiations had been taking place between the British Red Cross Society and M. Spahlinger, but so far as he was aware no definite arrangements had been concluded.

Lieut.-Colonel Guinness stated, on March 28th, that the Army Dental Corps was formed under an Army Order 4, 1921, and would be able to provide an efficient dental service for the Expeditionary Force on mobilization.

Down to June 1st last 1,123 metal limbs were supplied to ex-service men, and since that date an average of 318 a month had been issued. The Minister was anxious that every limbless man should have a limb satisfactory to him, and where the metal limb was desired, and considered suitable and necessary by the limb fitting surgeon, it was supplied.

The Home Secretary has declined to accept a suggestion by Dr. Watts for legislation making it compulsory to establish welfare departments in factories and workshops employing more than fifty people. His view was that compulsion would prejudice the case.

In reply to a suggestion for the appointment of a woman commissioner with power to make representations on the administrative side of prisons and Borstal institutions, the Home Secretary said that the work of the Prison Commissioners was too heavy to make it possible to replace any of them by a woman without administrative experience of prisons, and to add a paid woman would involve an expenditure which could not be justified.

The latest estimates from local education authorities in England and Wales of the number of children of school age in their areas who were blind, or partially blind, related to the year 1920, and give a total of 5,800.

There is at present no intention of discontinuing medical boards in Dublin, which are necessary to meet the needs of pensioners. Constant attention is paid to the possibility for making economies, but it is not probable that any substantial saving can be effected.

HEALTH OF THE ROYAL AIR FORCE.

THE public anxiety about the condition of our Air Force defences may have attracted the attention of medical men to what its medical service has been doing, and the second Report on the Health of the Royal Air Force for the Year 1921,[1] submitted by Air Commodore D. Munro, Director of Medical Services, may therefore be said to have appeared at an appropriate moment.

This report is on the same general lines and of almost exactly the same length as the previous and first report, for the year 1920, which was fully noticed in the BRITISH MEDICAL JOURNAL of December 31st, 1921 (p. 1122); but statistics relating to the health of the Royal Air Force in India which were not included in the first report are now given. It is admitted that the health figures for India are not satisfactory, and this is ascribed to the inexperience of both officers and men in the precautions and sanitary measures necessary for the preservation of health in the tropics, to the presence of men new to tropical climates, living under camp conditions in several of the stations, to the disposing influence of heavy physical work for long hours, and in some units to lack of trained unit sanitary squads, the provision of which, it is hoped, will be supplied in time. Disinfection has not been so thoroughly carried out as it should have been, apparently from lack of disinfectors, and flies have therefore been unnecessarily numerous. The water and food supplies have been good, but the fly-proofing of some of the kitchens proved to be unsatisfactory on account of the large mesh of the gauze employed. In spite, however, of the greater incidence of sickness in India than elsewhere it is satisfactory to learn that the health of the total force shows a well marked improvement, and that the death rate (excluding the twenty-four deaths in the R.38 disaster) for 1921 works out at 3.9, as compared with 4.4 per 1,000 in 1920.

Efforts made to reduce venereal disease have been successful in lowering the total case incidence in the Royal Air Force from 49.6 in 1920 to 36.1 per 1,000; the prophylactic measures adopted have been educational, recreational, and preventive; all men acquiring venereal disease are questioned by their medical officer as to the measures of prophylactic disinfection adopted, and, according to the statement given, are recorded as "used properly," "used improperly," or "not used," the first term being applied only to instances in which the procedure was carried out within two hours of exposure. The case incidence per 1,000 of scabies fell from 32.2 in 1920 to 14.3, and the average duration of each case from 12.3 to 10.3 days, but this is still too long; the case incidence of the group of affections included under the heading of "upper air-passage infection" was slighter lower, but that of influenza was 26.4, as compared with 12.7 per 1,000 in 1921, chiefly from a mild type of the disease.

Graphs of the incidence of sandfly fever show a well marked reduction in Iraq for 1921, where experience shows that the severity varies so much from year to year that it is impossible to say how much the lowered case incidence was due to the prophylactic measures. The disease is usually more frequent and severe in new arrivals. Research carried out at Malta by the R.A.F. bacteriologist led to the isolation, from cases of the disease, of an organism very similar to *Leptospira icterohaemorrhagiae*; but, as transmission of the disease in its characteristic form to men or animals has not been obtained, no specificity is claimed for the spirochaete. At Bagdad blood examinations of 70 cases showed the same features as in Malta—namely, a leucopenia for the first three to five days, followed by a leucocytosis. By routine treatment consisting of starvation, purgation, and doses of aspirin, the duration of disability was shortened. In sandfly fever the early leucopenia is accompanied by a relative lymphocytosis; this is of value in making a diagnosis from the effects of exposure to the direct, or less often the indirect, action of the sun's rays. For cases of a comparatively mild nature, for which the only terms in the Official Nomenclature of Diseases — heatstroke, sunstroke, and insolation—are not warranted, the term "heat exhaustion" has now been introduced; the older names can therefore be reserved for cases with a sudden onset, usually accompanied by hyperpyrexia, and with or without cerebral symptoms and unconsciousness. The clinical picture of heat exhaustion includes comparatively slight fever, dizziness, intense headache, pain in the back and limbs, and varying degrees of collapse; it must be distinguished not only from sandfly fever, but from sudden pyrexias which often appear to be due to constipation.

The nomenclature of functional nervous disorders has also been revised in the light of modern psychological research: the term "psychosis" is confined to the diseases designated in the official nomenclature as "mental diseases," with the partial exception of psychasthenia. The term "psychasthenia" is restricted to the clinical entity described by Janet, which is mainly characterized by volitional defects and obsessional ideas or impulses; when the latter are antisocial, psychasthenia may fall under the heading of a psychosis, otherwise it belongs to the next group. The psychoneuroses are disorders of function other than the psychoses that are purely psychic in origin, and are subdivided into: (1) hysteria, including suggestion neurosis and conversion hysteria; (2) neurasthenia, characterized by symptoms of mental and physical fatigue; (3) anxiety neuroses with "nervousness," depression, insomnia, emotional instability, lack of concentration, defective memory, with or without tremor and tachycardia; (4) border-line cases with, in addition to the symptoms of anxiety neurosis, so much intellectual impairment that the patient is incapable of looking after himself and his affairs properly. The form of psychoneurosis most commonly met with in the Air Service is the anxiety neurosis which is generally speaking associated with flying stress, whereas neurasthenia specially occurred as the result of arduous administrative responsibilities and lack of physical exercise.

The section on physical efficiency shows that all officers are examined yearly, and the results of both the routine clinical examination and of the physical efficiency tests compared with the previous records; the effects of climate and flying can thus be estimated. The importance of this is that an officer who, after much flying in India or Iraq for a year or more, remains physically fit for full flying duties may be assumed to be well adapted to withstand the strain of war flying.

This report, with its charts and numerous tables, contains much interesting information, and bears witness to the energetic spirit of the medical service of the Royal Air Force.

[1] Report on the Health of the Royal Air Force for the Year 1921. Air Publication 334. Published by H.M. Stationery Office. 1923. (Pp. 80; 5 charts, 32 tables. Price 5s. net.)

England and Wales.

WELSH NATIONAL MEDICAL SCHOOL.

THE Privy Council has written another letter adhering to its view that the constitution recently submitted for the Welsh National Medical School is unsuitable. It is pointed out that the principal objects of any scheme should be:

1. To provide the organization which will give the school the best opportunity of developing successfully into a first-rate centre of medical teaching and research.
2. To give the school a genuinely national status.
3. To recognize the special interests of the Cardiff University College in the school.

The Privy Council finds that in the scheme submitted the attempt to harmonize these objects has resulted in neglect of the first, though from the point of view of the interests of university education it is undoubtedly the most important of the three, and in giving less than its due weight to the second. The Council considers that it will not be a short or easy task to build up out of the existing material a complete and well equipped school, and that as a matter of common prudence care should be taken that the mere machinery of government should interpose no unnecessary obstacles. The proposal actually made, however, is for a division of controlling functions between no fewer than four bodies—the University Council, the Advisory Board of Medicine of the University, the College Council, and the College Board of Medicine. The school's chances of success would, it is considered, be far greater under the simpler method of administration recommended by the recent Royal Commission. The reasonable claims of Cardiff University College could be met, not by bringing within its administration an institution whose government it is desired to put on a broad national basis and for which separate financial provision seems advisable, but by giving it a very substantial representation on the governing body of that institution. The Cardiff College would gain by being relieved

of a partial and ill defined responsibility for an institution the ultimate control of which no one proposes to give to it, and the School of Medicine, if established as an independent unit, would, to its great benefit, receive a status and form of government which would be simple and easy to understand; its administration, under the University, would be in the hands of a single authority with an undivided interest in the furtherance of medical education and research.

NURSING AND MIDWIFERY EXHIBITION.

What is probably the largest Nursing and Midwifery Exhibition yet held in this country has been open during the present week at the Central Hall, Westminster. It is the thirteenth of an annual series of such exhibitions, and, thanks to the larger space available on this occasion, it includes for the first time a hospital section.

A model operating theatre has been installed, various firms supplying the equipment, model offices for a matron and a hospital secretary, and a model ward kitchen. The British Red Cross Society has given demonstrations in this section of the treatment by light baths and electrical apparatus administered to service pensioners and others, and the St. John Ambulance Association has demonstrated its various activities. The remainder of the section is occupied by an exhibition of coloured anatomical models, lent by the Science Museum at South Kensington, some pathological exhibits from the Cancer Hospital and the Chelsea Hospital for Women, and various charts, photographs, and radiographs. The main exhibition comprises well over a hundred trade stands, chiefly displaying various modern requisites for the sick-room, the lying-in chamber, the nursery, and the nurse's personal outfit. In addition to most of the familiar foods and toilet preparations, such things were noticed as a "chiropody clinic," and an improved incubator, or "thermostatic nurse," for premature or sickly infants, in which the electrical heating of the chamber is automatically reduced day by day so as to prepare the child for the outer temperature. We were informed that these appliances can now be hired in an emergency.

In association with the exhibition a four days' conference has been held. The programme, arranged by a committee of matrons of the principal hospitals, included such subjects as district nursing, the place of the midwife in the public health scheme, dental care and food values, venereal diseases, and the conditions of nursing in certain European countries. The exhibition closes to-day (Saturday).

LIVERPOOL ROYAL INFIRMARY.

The annual meeting of the subscribers of the Royal Infirmary took place on March 21st, with the President, Mr. Thomas H. Bickerton, consulting ophthalmic surgeon, in the chair. The honorary treasurer's report showed that £14,837 had been received as legacies during the past year, and £2,665 represented a grant from the Voluntary Hospitals Commission. The result was that on the year's working of the institution there was an excess of—total income over total expenditure—£5,852. Unfortunately, owing to a further decrease in annual subscriptions, the ordinary income showed a deficit of £11,214. The building of the new nurses' home was progressing rapidly, towards the cost of which £28,000 was available, and an urgent appeal for the amount outstanding—£9,000—was made by the treasurer, who commented upon the extraordinary number of legacies the Infirmary had received during the past year. The number of in-patients was 4,477, an increase of 324 over the preceding year. The number of out-patients that attended the various departments was 26,821.

Mr. Bickerton, in moving the adoption of the report and financial statement, gave an interesting historical sketch of the Royal Infirmary, which was instituted in 1749, up to the present time. Henry Park was one of the first surgeons appointed, and three successive generations of Bickersteths covered the whole period from 1749 to the present day. During these years nursing had developed from the Sairey Gamp type of nurse to the present efficient trained nursing sister. Previous to 1862 convalescents were frequently used to wait on the other patients, and not infrequently the so-called nurses were discharged for "want of steadiness." He made a special appeal on behalf of the new nurses' home, which was essential for their health and happiness. The public should not forget what an important part nurses played in maintaining the health and administering to the sick in all ranks of the community. Mr. C. Thurstan Holland, having resigned office owing to the age limit, received the warm thanks of the meeting for his services as honorary radiologist during the past eighteen years, and (as we announced last week) he was appointed honorary consulting radiologist. Mr. Bickerton's address was much appreciated, and he was unanimously re-elected president for the ensuing year.

Scotland.

EXCHANGE OF PROFESSORS.

AN interesting development in the relations between Edinburgh and some of the American medical schools has been initiated by a visit of Sir Harold Stiles to Boston. Sir Harold Stiles, who is Professor of Clinical Surgery in the University of Edinburgh, will take the place at Harvard University of Professor Harvey Cushing, and has been appointed *pro tempore* a surgeon to the Peter Bent Brigham Hospital, where Professor Cushing has a charge of 170 beds. Sir Harold Stiles will be in charge for the last fortnight of the term and will have the fullest opportunity of studying the surgical methods practised at the celebrated Harvard School, as well as of demonstrating Edinburgh methods to the American students. He intends to be back in time to attend the meeting of the Association of Surgeons of Great Britain and Ireland during the first week of May; an arrangement of this kind, therefore, does not involve an undue expenditure of time. The development of these temporary inter-university relations must tend to broaden professional study and conduce to increased efficiency in teaching methods, as well as giving a busman's holiday to the professors granted leave of absence from their own home duties.

CHURCH OF SCOTLAND DEACONESS HOSPITAL.

At the annual meeting of contributors to the Deaconess Hospital, Edinburgh, the Right Rev. the Moderator of the Church of Scotland presided, and the annual report was submitted by the Hon. Lord Sands. It showed that 751 in-patients and 4,492 out-patients had been treated by the hospital in the past year, and the chairman described the hospital as, for its size, one of the most valuable institutions in the country. It had recently been recognized by the General Nursing Council for Scotland as one of the hospitals at which training qualifies for the nursing certificate. Although the training was mainly reserved for those intending to become missionary nurses at home or abroad the applications had been very numerous. The finance of the hospital had been satisfactory, the year's work showing a net credit balance of £56 as compared with a debit balance of £64 at the end of the previous year. The report was adopted on the motion of Professor G. Lovell Gulland, C.M.G., M.D.

This hospital, it may be noted, affords an interesting example of the smooth working of a contributory scheme. During the twenty-nine years of its existence an increasing number of the beds have been in some instances permanently endowed and in a larger number of cases are voluntarily supported from year to year by various church congregations and other organizations such as guilds and societies within the Church of Scotland. Over 60 per cent. of the beds are thus supported with the implied condition that patients recommended by a supporting body will be given priority of admission over those on the ordinary waiting list, subject to acceptance as suitable cases by the medical or surgical staff of the hospital. The actual cost of maintenance per bed per annum is over £108, but the Board accepts £90 per annum for the support of a special bed for the above-mentioned purpose, or £45 for support of a cot in the children's ward. Private donors who have benefited from the hospital, or guilds with a personal interest, are encouraged to present £10, representing the average cost for the maintenance of one patient admitted. The scheme, which works smoothly and satisfactorily as a combination of charity and sound business principle in hospital administration, may interest those who are concerned in the changing hospital conditions of the present day.

LETHARGIC ENCEPHALITIS.

The medical officer of health for Glasgow has reported that since March 14th, when 39 cases of lethargic encephalitis had been notified, 18 more cases have occurred. No further deaths, however, had taken place, the number remaining at 8. During March there had been a decrease in the severity of the disease, such cases as were reported being of a mild character. The experience in Edinburgh has been similar, a decrease having appeared in the number of new cases, the mortality, and the severity in the type of case.

EDINBURGH ROYAL MATERNITY HOSPITAL.

During the year 1922 the numbers treated by the hospital were as follows: in hospital, 1,672; at their own homes

1,252; in the ante-natal department there were 1,297 new cases, with 3,480 revisits. Dr. William Fordyce succeeds Dr. Haig Ferguson as physician in charge for the quarter commencing April 1st, 1923, and Dr. James Young acts as assistant physician.

Ireland.

Reception by the President of the Ulster Medical Society.

The President of the Ulster Medical Society (Mr. R. J. Johnstone, F.R.C.S.Eng., M.P.) and Mrs. Johnstone gave a reception to the Fellows and Members and friends on the evening of March 22nd in the Medical Institute, Belfast. There was some delightful music, lightning sketches of some of the medical teachers in the school by Mr. Sheran, and at 10 p.m. refreshments and a dance, for which special curfew permits had been arranged. An interesting incident was a presentation to Dr. W. W. D. Thomson on his return to work after his long and very trying illness. The President, in making the presentation, said that when it was known that Dr. Thomson was returning after his long illness of two and a half years he and the secretary were inundated with requests to do something to show the profession's sympathy with one who was so popular and had reached so high a standing in the scientific ranks of medicine. No one was asked and no sum mentioned, and yet the result exceeded all expectations; he had the greatest pleasure in handing Dr. Thomson a beautiful piece of silver plate, on which were engraved the names of the 169 subscribers, and also in handing to Mrs. Thomson a diamond ring, tokens of the profession's sympathy during the long illness and a welcome on their return. A total of nearly £750 had been subscribed.

The profession is deeply indebted to the President and Mrs. Johnstone for their hospitality, and to the honorary secretary (Dr. Marshall) for the great trouble he took to make the meeting and presentation such a success.

Royal Victoria Hospital, Belfast.

The Lord Mayor of Belfast took the chair at the annual meeting of the hospital on March 23rd in the King Edward Memorial Hall. Professor Lindsay, F.R.C.P., chairman of the board of management, in seconding the adoption of the report and statement of accounts, said that when the hospital was built in 1903 the population of Belfast was 355,000. It was now supposed to be close on half a million. Belfast was under-hospitalled; the waiting lists were increasing, and many patients were kept from treatment, and unnecessary suffering and economic loss entailed. Plans of extension had now been adopted, including three new wards, enlargement of the out-patient department, a new nursing block, and some minor details; these extensions would leave room for much needed accommodation for *x* rays, massage, and some special departments; the estimated cost was £64,000, exclusive of equipment. A building committee had been appointed and operations would be commenced at once, and so help to meet the unemployment.

Mr. A. B. Mitchell, F.R.C.S., in moving the adoption of the medical staff report, said that the figures, which were a "record," gave but little idea of the actual work done day by day; the medical staff had formed a high standard, and they were determined to keep it up; and he could bear testimony to the enthusiasm and energy with which the work was done. He threw out a word of caution as regards the public estimation of the *x* rays, which was not as simple as was often supposed; it was a highly specialized department, and required much careful and scientific study. The staff recognized with gratitude the liberality and readiness of the board of management to meet all requirements.

Dr. Calwell, in seconding, drew attention to the new department of metabolism, and said that, although started only a few months, it was already making itself felt, and was proving of great help in diagnosis and treatment. If it increased at a similar rate it would soon require laboratories, wards, and a kitchen for itself. He drew attention also to the necessity of a psychiatric clinic, which would cost nothing and would deal with those cases of incipient insanity, border-line cases, backward children, and the neuroses. Such out-patient departments, sometimes involving an arrangement with a mental hospital, were found in the Middlesex Hospital, at Cardiff, Birmingham, and elsewhere; the Maudsley Hospital was their type. Professor R. J. Johnstone, in moving the re-election of the honorary secretary (Mr. B. M. Young) and of the honorary treasurer (Mr. Berrington), paid them a well deserved compliment for their interest in the hospital and their readiness on all occasions to help the medical staff.

Free State Army Medical Service.

The remuneration of medical officers in the army of the Irish Free State has been announced as follows:

	£	s.	d.	
Lieutenant	1	0	0	a day.
Captain...	1	10	0	,,
Commandant	2	2	0	,,
Colonel	1,000	0	0	a year.
Colonel (while holding the rank of Deputy Director of Medical Services)...	1,250	0	0	,,
Major-General Director of Medical Services	1,500	0	0	,,

These salaries do not include allowances, which have not been yet fixed. At present medical officers are only engaged for one year. It is understood that when the end of the present civil war is reached the necessity for the present comparatively large service will cease, and officers will be appointed on a permanent basis at the remuneration already stated with allowances fixed on a peace basis.

Major-General M. R. J. Hayes, F.R.C.S.I., Director-General of the Free State Army Medical Service, has retired; he had occupied the position for eight months, having accepted the office temporarily to organize the service. His retirement, however, is very much regretted by the Irish profession generally, but more especially by the officers of all ranks in the Irish Free State Army Medical Service. The position which General Hayes was called upon to fill was a very difficult one, as he had to lay the foundations of his organization in the midst of a very violent civil war. It is stated that his successor will be Colonel F. J. Morrin, M.B., who has been in charge of the Curragh district for the past year. General Hayes and Colonel Morrin both served in France during the European war.

India.

The Retrenchment Committee.

Lord Inchcape and the other members of the Retrenchment Committee formally presented their report to the Viceroy on March 2nd, but copies are not yet generally available. The recommendations of the Committee are unanimous; the net reductions recommended amount to 19¼ crores (£12,800,000). Of the total reduction more than 10½ crores is to be effected in military expenditure. The total reduction on expenditure on medical services and public health is put at nearly 1½ lakhs (about £9,000). The abolition of the separate post of Public Health Commissioner is recommended, and it is also advised that the directorship of medical research should be abolished, the duties being taken over by the director of the Kasauli Institute. It is recommended that the payment of research officers from central revenue should cease and that the grant-in-aid to the Research Fund Association should be discontinued. The association, it is stated, has accumulated 33 lakhs, derived from the Government contribution and earmarked for a new central institute. The interest on this, it is advised, should be used for the maintenance of medical research, which seems to imply that the proposal to erect a central institute at Delhi is to be dropped. The Financial Secretary has stated that the Government hopes to give practical effect to the recommendations of the Committee at an early date. In some preliminary comments on the report the *Pioneer* mentions that the inclusion of medical research undertaken in the interests of public health among the directions in which retrenchment can be effected on any large scale can only be regarded as false economy in the long run; any such suggestion should, it considers, be closely scrutinized. At the same time the need for economy is admitted, since for five successive years the budget has shown a deficit, and the reception of the report in India has been not unfavourable. It is estimated that the deficit for the year 1923–24 will be nearly 6 crores, although some of the reductions recommended by the Inchcape Committee have been embodied in the budget.

Retrenchment in Bengal.

The Bengal Retrenchment Committee has issued a report which makes some sweeping recommendations in regard to the public health service. The abolition of the school hygiene branch of the public health service is recommended, the

Committee considering that a special staff for school hygiene and the medical inspection of school children is unnecessary. A permanent assistant director for investigation into the progress of kala-azar is also believed unnecessary, a recommendation which apparently means that kala-azar field work in Bengal should be shut down. It is recommended that district hospitals and dispensaries should cease ultimately to be a direct charge on provincial revenues; the opinion is expressed that there is no reason why the Government should pay any part of the salaries of district health officers—which means, it may be assumed, the dismissal of the few existing health officers. The importance of increasing, and not diminishing, the work of the public health department in Bengal is, on the other hand, emphasized in an article in the *Statesman* (Calcutta) of February 15th. It is pointed out that what is needed in India is a modern health policy and better co-ordination of the responsible health authorities. The Director of Public Health of Bengal has repeatedly pointed out the need of improved sanitary administration in the province. Antimalarial work has been seriously hampered owing to insufficient staff, and much work remains to be done also to combat cholera, tuberculosis, beri-beri, kala-azar, leprosy, and other diseases. There is need also, it is stated, for extending propaganda work in public health throughout the province. Attention to industrial hygiene is urgently required; it has been shown that there are 680 registered factories in Bengal employing over 524,000 workers, which does not include hundreds of thousands of workers in tea-gardens, brick-fields, and other industries, nor in the vast number of minor occupations—in Calcutta alone, for example, there are over 500 printing establishments. There is, however, no staff available for the purpose of collecting information regarding industrial hygiene, as a preparation for taking the measures necessary to improve the health of the workers and the conditions under which they labour.

American Medical Diplomas in India.

The Government of Bengal has issued a warning to Indian students against taking courses at a private institution to be established in Calcutta called "The International Medical College." This institution purports, it is stated, to train students for the M.B. and M.D. degrees of the Lincoln Jefferson University of Illinois, U.S.A.; the Bengal Government has pointed out that this university is not recognized by the General Medical Council of the United Kingdom, and that its degrees and diplomas cannot, therefore, be accepted by the Government as satisfactory qualifications for the practice of Western medical science.

Correspondence.

A HOSPITAL "MAINTENANCE" SYSTEM.

SIR,—I have to thank you for the friendly notice given in your issue of March 31st to my proposed "maintenance" system in connexion with the finance of our voluntary hospitals, and, with your permission, I will reply to certain points raised. They are three in number, and I will deal with them seriatim.

The first is the inquiry as to what is meant by the term "necessitous poor." The answer will not be found in any dictionary, for the expression, at any rate in Scotland, has a different meaning according as it is used by the Education, the Health, and the Poor Law authorities. It is, however, that of the latter that is implied in my pamphlet, for it was to aid that class that our voluntary hospitals were originally established, and my reply is that the expression means "persons who are eligible for hospital treatment in terms of the Poor Law." In other words, the "necessitous poor" are, as our Glasgow Royal Infirmary charter aptly puts it, those "labouring under poverty and disease." From personal knowledge and experience I am satisfied that in the present day 90 per cent. of the patients in our voluntary hospitals would not satisfy this Poor Law test, which would entitle them to *free* hospital treatment. That is why I state in the pamphlet that our voluntary hospitals are no longer carrying out the rôle for which they were originally established in the eighteenth century, the period when the first ones came into existence.

The second point in your article calling for notice is that it is difficult to make a sharp distinction between the two headings of expenditure for maintenance of hospital and expenditure incurred for maintenance of patients. I fail to see how any difficulty can arise, seeing that the term "maintenance of patients" is distinctly limited to the cost of the food consumed by them and of the drugs, lotions, and surgical dressings used by them. The cost of the feeding of the hospital staffs is borne by the hospital and comes under its maintenance, so that there need be no confusion on this item. It is true that in the pamphlet the suggestion is made that the cost of the renewals of the ward feeding vessels and of the surgical dressing equipment might be considered as belonging to the maintenance charges against the patients, but it is such a small item that it may be omitted from them and be placed under the hospital maintenance expenses, and thus avoid any confusion. If this is done there is a clear and sharp distinction between hospital and patients' maintenance, and it is fully detailed in the pamphlet.

The third and last point alluded to in the article is the bearing that this proposed "maintenance" system has upon the present hospital policy of the British Medical Association. In my opinion it is outside it altogether, and in no way affects it. Reference to the resolutions and memorandum of the Association will show that the suggested "staff fund" will only materialize when the contributions from patients, or from any other sources on their behalf, are made to "the hospital maintenance fees." Under my proposed "maintenance" scheme nothing is paid to the upkeep or expenses of the hospital maintenance. It is a payment made to defray the expense of the food consumed by the patients and of the drugs, lotions, and surgical dressings used by them. I cannot contemplate the Association collectively advocating a claim for any share of such a payment, nor, I am sure, would members of the Association individually approve of such a step.—I am, etc.,

Glasgow, April 2nd. GEORGE THOS. BEATSON, M.D.

HOSPITAL POLICY.

SIR,—I have already agreed with the essentials of Dr. Fothergill's arguments (March 24th, p. 538), and support the Brighton resolution; but I remain unconvinced of error by his latest contribution and am not enamcured of his scheme for reform. Agricultural labourers furnish a large proportion of our hospital occupants and still form about one-fifteenth of the working population. They are quite unable to subscribe, in addition to their compulsory insurance, another 3d. a week against the comparatively remote contingency of in-patient hospital need. Many other workers receive small or irregular wage, and are equally incapable, while something like 10 per cent. are unemployed.

I cannot, therefore, accept Dr. Fothergill's estimate. He is evidently a convert to the so-called "Sussex," in reality Brighton and Hove, "Provident Scheme." I have studied it with care, and discussed it fully with Dr. Gordon Dill eighteen months ago, but was unable to recommend it to our hospital board. I am still of the same mind. Although this scheme has now been in operation for over two years, the financial position of the Royal Sussex County Hospital is quite deplorable, whereas of the eight hospitals in West Sussex where no such scheme is in operation only one qualified under the terms set out by the Hospitals Commission to obtain a grant on account of deficit. Again, out of a population in Brighton and Hove of 173,000, only 4,790 have even yet joined the scheme, and of these it is probable that a large number in other places would subscribe as much without expecting benefit, for their ordinary subscription list is particularly low, furnishing but 8 per cent. of their income, while ours yields 14.5 per cent., and 14 per cent. is the average for such hospitals. Again, although "from every side of the county has come tidings that 3d. a week was too much, the men simply could not pay it," and although even on a 3d. basis the scheme barely pays its way, despite the fact that no one can claim benefit who has not subscribed for twelve months, yet we find that the plea put forward that it is "not in any sense a charity" will not bear investigation, since nothing is allowed for the immense capital outlay on land, building, furnishing, and equipment of a large hospital. Only actual running expenses are catered for even in affiliated hospitals, and but £1 a week in others; yet these subscribers, every one of whom is, if admitted, receiving charity in varying degree, are taught to imagine that they are paying their full cost, remunerating the staff, and benefiting the institution in addition.

I believe that the great majority of hospital staffs in

Great Britain will decline to allow themselves to be roped into what is simply a glorified contract practice, having the drawbacks that there is neither free choice of doctor (for the doctors are limited to the staff) nor of patient (for the doctors must attend all eligible subscribers), and further that, if the scheme is really to succeed, it will require advertisement, touting, and systematic collection on a large scale, in competition with doctors perhaps equally capable not on the staff, and with hospitals outside the scheme. Moreover, I doubt extremely if the working and lower middle class will ever, except under such compulsion as can be exercised in large works or powerful unions, insure at adequate cost in large numbers against a mere possibility, especially so long as the uninsured can reap the same benefit. On the other hand, if compulsion is to be employed, it were far better done universally and equitably by municipal or Government intervention, while the refusal to admit the uninsured, however urgent his need, would be repugnant to public opinion.

Therefore I do not visualize that Utopia predicted by Dr. Fothergill, and while agreeing on other matters shall continue to believe that the only alternative to our present voluntary system, with its appeals to the charitable, is State or municipal hospitals, which most of us would avoid. For my own part, indeed, I regard that commingling of all classes towards a common beneficent object, that local patriotic pride and human interest of rich and poor together in their local hospital, which finds expression in the manner despised by Dr. Fothergill, and yields results so cogently set forth by Sir Anthony Bowlby in his evidence before the Cave Committee—that spirit I regard as not only unobjectionable, but entirely admirable, and to be commended as one of the best bulwarks left to us against those perilous forces tending towards class disruption and revolution which menace our national peace. Let us tread warily lest we lightly imperil a precious heritage, whether in search of some elusive Utopia or in mere pursuit of gain.—I am, etc.,

Chichester, March 25th. G. C. GARRATT.

TREATMENT OF EARLY MENTAL CASES.

SIR,—Two letters on the subject which appeared in the JOURNAL for March 24th induce me to ask you to insert the following remarks. Both your correspondents mention the Maudsley Hospital in relation to the early treatment of mental cases. It is not perfectly clear from Dr. Goodall's letter whether he has safeguarded himself from being taken to the "Maudsley" or any similar institution in the deplorable event of his ever needing mental treatment. For the rest Dr. Goodall's letter is worthy of all acceptation. But Dr. White's letter clearly disapproves of such institutions as the Maudsley Hospital for the purpose of early treatment, and condemns all places of care of early mental cases where the patient may run any "risk" of being detained.

It is not questionable that there are many instances in which persons have shown the first signs of mental aberration and have very soon afterwards proved themselves to be in need of constant care and watching. For such cases, be they transitory or not, the attractive sanatoriums indicated, as Dr. White says, by "common sense" and apparently *not* subject to any approved authority, would be certainly unfitted.

Of course it is a well known fact that "mental" patients of *all* sorts and degrees dread the thought of being sent to a mental institution by whatever name it may be called. Equally, I deem, it is known that the near prospect of being thus treated will often contribute, or indeed lead directly to their sudden or more or less gradual recovery. Such cases include so-called "*psychoses*," "*neuroses*," and the conveniently styled category of *psychoneuroses*. More than twenty-five years ago, while in practice, I had several such cases, all apparently and rapidly cured for an indefinite time, and a few, which I was able to follow out for some years, where no recurrence of untoward symptoms took place. One of these was a case of an intensely introspective young woman with a voluminous knowledge of psychological and medical literature. After a long interview with her I informed her mother, in answer to a question whether the girl was incurable, that there was every prospect of recovery if she would let her come into a nursing home for about a week. I was told that she could not agree to this, partly because the girl would refuse to go, and partly on the score of expense. I then advised the mother to take her to consult a friend of mine who was then superintendent of an asylum, but not to inform her daughter further than that *I* desired to know my friend's opinion of her case. After I had communicated with him, the patient was taken by her mother, but on arriving at the entrance the girl asked what the building was, and, though the mother told her the exact truth, she steadfastly declined to go further, walked away more actively than she had moved for many months, and very soon lost all her "psychoneurotic" symptoms. The symptoms were such as would, I think, have precluded any mental expert from sending the patient to any attractive sanatorium uncontrolled by outside authority, and necessarily unprepared to cope properly with sudden emergencies. I mention this case as it illustrates another aspect of the utility of mental hospitals, including, specially, of course, the Maudsley, in the possible treatment of early mental cases, and even of several who may never enter them. It cannot be doubted that relatives will be far more ready to take their patients to institutions like the Maudsley than to ordinary asylums, whether or no they may be admitted within.—I am, etc.,

London, W., March 25th. H. BRYAN DONKIN.

SUGAR *VERSUS* ALCOHOL.

SIR,—I have read with interest your leading article on sugar *versus* alcohol (March 24th, p. 523) with respect to the reduction in their taxation. I trust, however, that the tax on sugar will not be reduced. Excessive consumption of sugar is now very common in England, and its influence in predisposing to diabetes mellitus is deserving of greater consideration. Excess of starchy food, or a diet consisting chiefly of starchy carbohydrates, probably does not increase the risk of diabetes. But, though diabetes often occurs in those who have not taken sugar in large quantities, it is probable that the excessive consumption of sugar greatly increases the risk of the disease. (I have given reasons for these opinions in articles on "The geographical distribution of diabetes,"[1] on "The etiology of diabetes mellitus,"[2] and on "The prevention of diabetes mellitus."[3]) Joslin has drawn attention to the marked increase of diabetes in the United States between 1900 and 1918, and points out that the yearly average consumption of sugar by each individual had greatly increased in this period. He remarks: "It is possible that the recent increase in the quantity of sugar consumed *per capita* in the United States has increased our number of diabetics."

Sugar is a luxury and not a necessity in food. If any articles of food have to be taxed there is no hardship in taxing sugar. So much sugar is now used in many articles of food, supplied in restaurants and hotels, that they are very distasteful to those who are not specially fond of sweet food. If any reduction of taxation is now possible in England, I think many readers will consider that a reduction of some other form of taxation (the income tax, for example) would be desirable before a reduction in the tax on sugar and alcohol. —I am, etc.,

Manchester, March 24th. R. T. WILLIAMSON.

SIR,—All serious students will be grateful to you for the valuable article in the issue of March 24th. May I venture to suggest three points which emphasize some of the physiological differences in the action of these agents, which may help in the discussion the article will provoke?

1. The metabolism of sugar is under unique physiological control in the human body whereby excess within fairly wide limits is promptly and efficiently dealt with. By this means the blood sugar content is maintained at a remarkably uniform level, and the excess not needed for immediate purposes is stored as glycogen ready for future demands.[4] Alcohol is not so controlled and it cannot be stored for future use.

2. Excessive ingestion of sugar may lead to a temporary alimentary hyperglycaemia or even glycosuria. If a second dose of sugar be given as the hyperglycaemia is declining it is followed by a much less marked reaction (Bang). Macleod, in referring to Bang's work, says: "It indicates that assimilation of sugar causes stimulation of the sugar-destroying functions of the body; the first absorbed sugar stimulates the metabolic functions."[5] Here, again, the action of alcohol seems to be entirely different. Mellanby has demonstrated that a second dose of alcohol given eighteen and a half hours after the injection of 50 c.cm. leads to a higher concentration of alcohol in the blood, accompanied by a more profound

[1] *Med. Chronicle*, July, 1909.
[2] BRITISH MEDICAL JOURNAL, February 2nd, 1918.
[3] *Practitioner*, October, 1920.
[4] Chittenden, *The Nutrition of Man*, 1907; and E. H. Starling, *Principles of Human Physiology*, 1922.
[5] Macleod in *Physiological Review*, American Phys. Soc., April, 1921.

intoxication. This is due, he claims, to the accumulative effect of the alcohol.[1]

3. With an excessive dose of glucose not only is the glycogenic function stimulated to meet the demand for a uniform blood sugar content, but more glucose is oxidized, as evidenced by a rising respiratory quotient. Sugar has a specific dynamic action, alcohol has no such specific dynamic action; and, moreover, a high alcohol concentration in the blood not only limits its own oxidation, but also the oxidation of other sources of energy.[2]

These facts, coupled with many others, lie behind such a dictum as: "Throughout the body generally the presence of even a slight amount of undecomposed alcohol leads to a diminution of the chemical energy of the cells, which interferes with metabolism and may result in chronic disease. . . . The habitual consumption of alcohol in quantities which, though insufficient to produce any outward and visible signs of intoxication, are yet beyond the immediate oxidizing power of the cells, may end in playing havoc with the tissues."[3]—I am, etc.,

Beckenham, Kent, March 26th. COURTENAY C. WEEKS.

INTRACAPSULAR EXTRACTION OF CATARACT.

SIR,—In the review of Nesfield's book on ophthalmic surgery (BRITISH MEDICAL JOURNAL for February 24th, p. 334) a statement occurs which I think should not be allowed to pass unquestioned.

It is stated that the suspensory ligament of the lens is "much tougher in Europeans than in Hindus. Hence the failure of European ophthalmic surgeons to obtain satisfactory results with the several intracapsular operations that have been evolved in India." I have extracted the lens in a number of Europeans in the capsule, and while I have met with tough suspensory ligaments in some cases, in others the operation has been as easy as it is possible to imagine. It must not be forgotten also that the suspensory ligaments of Indians are often very tough, as anyone who has extracted a few thousands of lenses knows from bitter experience. Also I think most experienced operators by the capsulotomy and allied methods have learnt by sad experience that the suspensory ligament of Europeans is often very fragile. If it were not, escape of vitreous would, I think, be less often seen in these operations even than it is. The strength of the suspensory ligament, though it may be a factor, is by no means the sole factor, nor in my opinion the chief one.

There are other reasons why European operators have not obtained more satisfactory results by Smith's operation. I mention this method as it, or some modification of it, has been very extensively practised, not only in India, but in America and elsewhere. In my opinion a very important reason why most European operators have not obtained more satisfactory results by this method is that it is a very much more difficult operation to learn than the older operations, and requires for its successful performance a much higher degree of technical skill. I speak with a large experience of both methods. To get the best results one needs to have more practice than the ordinary clinic of Europe affords to the individual operator. It is also necessary for the beginner to have a very skilful assistant. His training requires special experience which the operator does not usually possess, I have trained several and know the difficulties.

In spite of its difficulties, however, in addition to several American ophthalmic surgeons one European operator at least appears to have obtained satisfactory results with Smith's operation, for in the *American Journal of Ophthalmology* for 1920 (p. 726) E. E. Maddox reports a case in which he successfully extracted a cataract in the capsule in a patient who suffered from gout, myxoedema, and malaria, and *who had lost the other eye after a cataract operation* from intraocular haemorrhage. From private information I understand that Smith's technique was adopted.

It is certain that a cautious surgeon like Maddox would not have employed this operation in such a formidable case had his previous experience of this method not been such as to give him considerable confidence.

I am of opinion after many years of experience that much better results would be obtained by the ordinary operator if he knew how to select his cases for this operation, especially in the beginning. It is not easy I admit. If, for instance, one selects for the first operation a stout, nervous patient with a prominent eye, escape of vitreous will be very likely to occur. If, on the other hand, one selects a thin, placid patient with a deep orbital cavity and a sunken eye, the operation will be found much easier. There are numerous other points which I cannot mention here for want of space.

Those of us who have had the great privilege of working with Colonel Smith know that he can usually recognize a difficult case, and that he would not allow an inexperienced pupil to perform the operation, no matter what his experience might have been of the older methods.

It is, however, not always possible to recognize such cases till the actual extraction of the lens commences. While Smith with his huge experience and great technical skill may be justified in extracting any lens in its capsule I believe others would do better, if not experienced, to lacerate the capsule if on trial the suspensory ligament is found to be very tough. When operating in India I always kept a sterilized cystotome ready in a separate receptacle in case it might be required, though I seldom had occasion to use it in cases which I had marked as suitable for Smith's operation.

Nesfield's operation is said by the reviewer to be simple. I do not wish to detract from its merit when I say that it is not so simple to perform as may appear from the description.

Finally, I would say that some opponents when passing judgement on intracapsular operations are apt to lose sight of the fact that loss of vitreous may occur in any form of operation for cataract and to pass lightly over the dangers resulting from lens matter left behind, the possibility of capsule being left in the wound to open the door to sepsis, and other drawbacks to the older operations.

I do not wish for a moment to underestimate the danger of loss of vitreous in any operation, but in a series of ninety-eight cases which I collected and published in 1908 I showed that escape of vitreous in intracapsular operations is apparently less serious than in capsulotomy operations, where it gets mixed up with lens matter. The average time which had elapsed after operation in these cases was three years. My subsequent experience has confirmed the opinion I expressed then, and I have had a large experience of both methods of operation, and have had special opportunities of observing the cases of other operators in India and in Europe. —I am, etc.,

A. E. J. LISTER, M.B., F.R.C.S.,
Lieutenant-Colonel I.M.S.(retd.).

Amberley, Glos., March 16th.

PUBLIC EDUCATION IN CONTROL OF CANCER.

SIR,—The members of the Royal Society of Medicine have agreed that the public require education with regard to cancer, and that the Royal Red Cross is the body which should undertake this work. Mr. J. E. Adams (BRITISH MEDICAL JOURNAL, March 24th, p. 509) says that the Royal Society of Medicine is the headquarters of scientific intelligence in the medical profession, an observation with which one may courteously join issue. There is the Ministry of Health, surely.

The question many will ask is whether the excellent Red Cross Society is the best body to undertake this work. Surely not. To commence with, numerous local authorities have already sanctioned schemes put forward by their medical officers of health for the spreading of the light. Deptford's effort consisted in newspaper articles, the printing and distribution of literature on the subject, and a supply of pamphlets for each of the nine clinics held in connexion with ante-natal and maternity and child welfare centres.

Public health departments are clearly the best centres for the spread of information and advice as to prevention. By all means add thereunto any ancillary aids to the desired end, but, mayhap, one may be pardoned for suggesting that public education regarding cancer and every other disease should be carried out with an even, insistent, and tireless reiteration as to the facts by trained persons who are known to the people as the accredited and qualified representatives of the local authorities who hold the nation's hall-mark, the guinea stamp.

If the Red Cross Society takes on the work, who will supply the ammunition, the information to it, and how will the same be broadcasted? We already have Health Weeks, Baby Weeks, Rat Weeks, and, I understand, a "Pencil Week." Will a cancer week be the next to be added unto us?

With the advent of infant welfare centres we have witnessed a steady fall in the infant mortality rate to its present comparatively reasonable proportions. The joint operations of the hard-working practitioner and his brother in

[1] Special Report Series, No. 31.
[2] Also BRITISH MEDICAL JOURNAL, August 5th, 1922.
[3] R. Hutchison, *Food and Dietetics*, 1922.

the health department has made this country the safest and the best to live in that the world has ever seen.

Could the Royal Society of Medicine do better than ask our splendid Red Cross Society to canvass for funds for those good men who are engaged in cancer and other research work? Would this not be better work than any cancer week—a rocket, a flare, and a silence?—I am, etc.,

CHARLES S. THOMSON,
Medical Officer of Health.

London, S.E., March 26th.

SIR,—In the discussion at the Royal Society of Medicine on this subject (reported on page 509 of your issue of March 24th) no mention was made of the propaganda which has been carried out by the Central Midwives Board.

In 1908 a leaflet on "Cancer of the Womb" and subsequently a leaflet on "Cancer of the Breast" were framed at the request of the Board by its chairman, Sir Francis Champneys, and copies of these are placed in the hands of every midwife on passing the Board's examination, together with the rules. These leaflets lay stress on the earliest signs and—in leaded type—on the necessity of medical treatment without any delay. Other leaflets deal with ophthalmia neonatorum, gonorrhoea, and syphilis.

Taking into consideration the fact that these leaflets have been distributed to many thousands of midwives who are, in a sense, at the centre of action, the steps taken by the Central Midwives Board ought not to be ignored. I enclose copies of the various leaflets.—I am, etc.,

H. G. WESTLEY,
Secretary, Central Midwives Board, 1, Queen Anne's Gate Buildings, Westminster, S.W.1.

March 27th.

*** The leaflets on cancer are short and very clearly expressed. Both are endorsed, "May be distributed to the Laity as well as to Midwives."

IONIC MEDICATION.

SIR,—The gist of Dr. David Campbell's paper (March 10th, p. 409) is that only a small quantity of any drug could be introduced into the human body through the electric current, and that drugs so introduced enter the blood as rapidly as a hypodermic injection, have the same action, and are as rapidly eliminated. Local concentration and penetration of ions beyond the skin are also denied.

The quantity of an ion introduced electrolytically into the human body in a given time, by a given current, depends on its electrochemical equivalent and the relative speed of the ions which participate in the conduction of the current.

The electrochemical equivalent signifies the mass of matter associated with a unit charge of electricity, and was first measured by Faraday, and afterwards by Lord Rayleigh. That of iodine is 0.0013 gram per coulomb = 0.078 mg. per milliampère-minute. Therefore, in forty minutes a current of 200 milliampères would transport into the tissues 624 mg., or 9.62 grains of iodine. This is not a small quantity, and, far from being whisked off in the blood stream, it was taken up and metabolized by the cells of the body, only 146 mg. being excreted in twenty-four hours. It is this local effect that is desired in ionization.

A hypodermic injection has no local action and is carried away by the blood stream at once. But ions are active, carry a charge of electricity, are propelled by an electromotive force, and attracted by the opposite pole. They could travel with, against, or across the blood current in whatever direction the opposite pole is placed. The position of the latter determines the degree of ionic penetration and concentration. This pole is erroneously called the "indifferent" electrode in textbooks, and one is led farther astray by the instruction to place it at any convenient position. To obtain local concentration and penetration in the right direction the part under treatment should be included between the two electrodes so that ions would travel in the most accessible direction.

Results must vary according to the technique and are bound to be bad where the technique is wrong. Then the critic, like the mechanic who blames the tools, would be vehement in the condemnation of the treatment, and would even call it dangerous if the patient got burnt. Wonderful results are obtained with the right technique—the outcome of several years' experience which cannot be picked up from books.

Living tissues impregnated with saline solutions are electrolytes and conduct electricity. The electric current in living tissues consists of nothing but the double current of ions. There is no other galvanic current to which Dr. Campbell attributes relief of pain, etc. When cocaine is ionized, is the anaesthesia due to the galvanic current? Is there no local concentration and penetration of the cocaine ions? There can be no current without the ions.

In the ionization of iodine, electrons from the generator enter the dissociated iodine atoms, and these iodine ions go through the glands of the skin and the liquids of the body. The atoms travel with their charges, and at the same rate; they are inseparable even if the ions pass from one liquid to another of different composition (Lodge). But on reaching solid conductors like muscles, nerves, ligaments, cartilage, bone, inflamed and thickened tissues, of different density and conductivity, the charges and the iodine atoms separate, but not before. The electrons get re-embodied in the atoms of the body juices, and there is an interchange of ions all along the path of the electrons to the opposite electrode, where again the ions become disembodied and are conducted along the wire. Each act of disembodiment and re-embodiment of the electrons means a modification of the ions and an adjustment of the electric equilibrium of the different tissues, particularly the diseased tissues. The body cells metabolize the iodine, the exhausted cells get recharged with electricity, germs are killed, toxins are neutralized, and healthy function is restored. With each treatment more and more iodine is unloaded along the path of the ions, and concentration and penetration are gradually increased.—I am, etc.,

CHARLES E. DE SILVA, M.D.

London, S.W., March 19th.

DERMATITIS AND DYED FUR.

SIR,—In my note, "Dermatitis from dyed fur," in the BRITISH MEDICAL JOURNAL (March 17th), I stated that the dye responsible for the dermatitis which has recently been so prevalent was probably a member of the paraphenylenediamine group.

Mr. Herbert Skinner, M.P.S., pharmaceutical chemist and analyst to the Royal Northern Hospital, was good enough to undertake the laborious and difficult task of identification of the dye, and has sent me a full report, of which the following is a short abstract:

The fur, cut away from the leather, yields nothing to distilled water. Dilute saline solution, alkalis, acids, and wool fat (if digested with it for a few hours), extract from the fur a coloured principle, which in its reactions and comparative tests accurately agrees with those described for the metaphenylenediamine base, which is one of those dyes stated by Dr. W. F. Castle, in his instructive letter (published in the BRITISH MEDICAL JOURNAL of March 24th, p. 535), to be in common use in dyeworks at the present time. A bichromate mordant appears to have been employed, and an ineffective technique at this stage is probably responsible for failure in fixation, proved by the ease with which the dye can be dissolved.

Mr. Skinner is satisfied that this dye is present in the samples of irritating fur submitted for investigation, and informs me that the meta-base is considered more poisonous to the skin than its better known isomer—paraphenylenediamine—which, according to Dr. Castle, is used for the deep black tones in certain types of fur. It is of considerable interest and significance to note that the dye which has been isolated is soluble in saline and wool fat, which have their analogues in the sweat and sebaceous secretions of the skin. Without such solubility it would have been a matter of great difficulty to establish a relation of cause and effect.

In justice to Dr. A. C. Roxburgh, who discusses the subject in considerable detail in your issue of March 24th, I desire to add that since my note was published I have met with several cases in which there was no oedema of the eyelids, and I should therefore elect to retract this symptom as pathognomonic of the specific reaction.

Such information concerning the place of production and issue as I have been able to obtain is so vague and conflicting that I have abandoned the attempt to determine it. This aspect of the problem is in any case one which is better left in official hands.—I am, etc.,

HENRY C. SEMON.

London, March 24th.

THE Filled Milk Bill, which previously had passed the United States House of Representatives, has been adopted by the Senate. It declares "filled milk" an adulterated article of food, injurious to public health, and states that its sale constitutes a fraud on the public. "Filled milk" is defined as any milk, cream, or skimmed milk, whether or not condensed, evaporated, concentrated, powdered, dried, or desiccated, to which has been added or with which is blended any fat or oil other than milk fat.

Obituary.

T. J. CREAN, V.C., D.S.O.

MAJOR THOMAS JOSEPH CREAN, V.C., D.S.O., R.A.M.C. (retired), died in London on March 25th. He was the second son of the late Michael Theobald Crean, barrister, of the Irish Land Commission, and was born in Dublin in 1873. He was educated at Clongowes School, and in the medical school of the Irish College of Surgeons, taking the L.R.C.S.I. and L.R.C.P.I. in 1896. In 1902 the Royal College of Surgeons of Ireland conferred the Fellowship upon him in recognition of his distinguished services. In 1891 he received the Royal Humane Society's testimonial for saving life at sea. For three years—1894 to 1896—he was a member of the Irish International Rugby fifteen, and in 1896 went to South Africa with the British Rugby fifteen which toured in South Africa that year. He made that country his home, settling in practice at Roxberg.

When the South African war began he at once enlisted as a trooper in the Imperial Light Horse, and a few months later, in March, 1900, he received a commission as captain in that corps. In June, 1901, he resigned his combatant commission to become surgeon-captain in the same corps. He was wounded at Elandslagte, at the very beginning of the war; he was wounded again, this time dangerously, at Zygerskloof, in December, 1901, when he was awarded the Victoria Cross "for great gallantry in attending to the wounded under a heavy fire at 150 yards range, although himself wounded, only desisting when he received a second, and what was thought to be a mortal, wound." He served with the Imperial Light Horse from the beginning to end of the war (1899–1902), taking part in the operations in Natal in 1899, including the actions at Elandslagte, Rietfontein, and Lombard's Kop, and the defence of Ladysmith, the relief of Mafeking, operations in the Transvaal, including the action at Frederikstad, and operations in the Orange River Colony. In addition to the V.C. he received the Queen's medal with five clasps, and the King's medal with two clasps. At the close of 1902 he accepted a regular commission as captain in the R.A.M.C., but resigned it four years later when he joined the Special Reserve of the R.A.M.C. He then started practice in London.

When the great war began, in August, 1914, he rejoined for duty as a major, and served with the first cavalry brigade in France in 1914–15, being mentioned in dispatches in the *London Gazette* of June 22nd, 1915, and receiving the D.S.O. from the same date. In 1916 he served in France as commanding officer of the 44th Field Ambulance, and subsequently as medical officer in charge of the hospital in the royal enclosure at Ascot. In 1905 he married Victoria, daughter of Don Tomas Heredia, of Malaga, and had one son and one daughter. He received the Arnott memorial gold medal in 1902.

ELFRIDA SPENCER, B.A., M.R.C.S., L.R.C.P.,
House-Surgeon, Victoria Hospital for Children.

THE death of Miss Elfrida Spencer, on March 17th, came as a great shock to all connected with Charing Cross Hospital and its Medical School. Miss Spencer, the only daughter of Mr. Walter G. Spencer, senior surgeon to the Westminster Hospital, and honorary librarian to the British Medical Association, was educated at the Cheltenham Ladies' College and at Bedford College for Women, London. In 1914 she passed the Final B.A. (London) examination with second class honours in classics. Her arts course concluded, her active mind then turned towards medicine. After a preliminary year at science she entered as a student at Charing Cross Hospital Medical School. From the outset of her career she was recognized as a student of considerable promise, and her sunny disposition rendered her most popular with her fellow students, while her versatility and organizing capacity made her a leader in all the social activities of the school. Miss Spencer obtained the Conjoint qualification in 1921, and was fortunate in holding, in succession, the three resident posts of house-physician, house-surgeon, and obstetric officer at Charing Cross Hospital.

We are indebted to Sir HERBERT WATERHOUSE for the following appeciation: As Miss Spencer was my house-surgeon I can testify to her skill, kindliness, and zeal. She had a man's judgement and a woman's charm. To illustrate the all-roundness of her knowledge, I can recall asking her, within a few minutes, the derivation of a Greek word, the branches of a cranial nerve, and the treatment she would adopt in a difficult surgical case, and receiving from her an intelligent answer in each instance. She proved herself a worthy daughter of one of the most learned of surgeons. Recently Miss Spencer was appointed house-surgeon at the Victoria Hospital for Children, where, for the second time, she became my house-surgeon. Only a few weeks after she had taken up her new duties a severe attack of influenza, followed by pneumonia, prematurely ended her useful life, every moment of which she had lived to the full. She leaves behind her a record of work well done and a gracious memory in the minds of her many friends.

ALFRED GEORGE SIMMINS, M.B., B.S.LOND., M.R.C.S., L.R.C.P.

IT is with deep regret that we record the deaths, within a few hours of each other, on March 23rd of Dr. A. G. Simmins and his wife. Both had recently been attacked by influenza, which in his case was followed by pneumonia and in that of his wife by heart failure.

Dr. Simmins was a student at Guy's and Westminster Hospitals and in 1914 took the diplomas of M.R.C.S. and L.R.C.P. On the outbreak of war he gave up a post under the Metropolitan Asylums Board and was gazetted temporary surgeon lieutenant R.N. on August 5th, 1914, and served throughout the war. He served on the battleship *Bellerophon*, the hospital ships *Plassy* and *Karapara*, and for a year at the R.N. Hospital, Haslar. While in the navy he took the M.B., B.S. degrees of the University of London, and also, in 1918, contributed a paper on the value in diagnosis and prognosis of the Arneth polymorphonuclear neutrophile leucocyte count to the *Journal of the R.N. Medical Service*.

After being demobilized in 1919 he acted for a time as medical registrar at the Westminster Hospital, but decided to go into general practice. He succeeded Dr. Croly at Hornsey and in a few years had built up an increasing practice there, and in 1921 he started a practice in the City, where he acted as medical examiner to the Canada Life and other insurance companies. He was also assistant medical officer in the venereal departments at the Royal Northern Hospital and the Hospital for Sick Children, Great Ormond Street. All this professional work—carried on for a considerable time without any real break or holiday—proved too much for his physical strength. He had been attending a number of patients with influenza when he himself contracted the disease, and in spite of all the devoted care and attention of his medical advisers and of his wife—herself a trained nurse—he succumbed to pneumonia. Mrs. Simmins, who had also been attacked, insisted on sharing the duties of nursing her husband. Towards the end she knew that he was dying and the shock of this, added to her own illness, was so great that she passed away in her sleep early on March 23rd, while her unconscious husband lay almost breathing his last in an adjoining room. They were laid to rest together at the New Southgate Cemetery on March 27th amid many signs of sympathy and respect.

Dr. Simmins was only 32 years of age and his wife a few years older. They leave three children—a boy of 6, a girl of 4, and a boy of 15 months; the two youngest are totally unprovided for. As will be gathered from the recital of Dr. Simmins's activities he was a man of great energy and industry, and under a quiet and unassuming demeanour he possessed considerable force of character. During the few years that he was in practice he had earned the gratitude and affection of his patients, both private and hospital. He was, moreover, a man of considerable originality, introducing several new details in the method of treating the venereal patients in his clinics. His death at such an early age is a real loss to the profession, for had he been spared he would have made a name for himself. Our sympathy is extended to the relatives and particularly to the three orphaned children.

Dr. WILLIAM THOMSON of Hull, who died on March 23rd at the early age of 39, was a native of Thornhill, Dumfriesshire, and was educated at the University of Edinburgh, where he graduated M.B. Ch.B. in 1907. In 1910 he took the F.R.C.S.Edin. After serving as house-surgeon at the Hull Royal Infirmary he succeeded to the practice of Dr. Parkin. During the war he did temporary work at the Hull Royal Infirmary, to which institution he was appointed surgeon in August, 1919. Dr. Thomson was a member of the East York Division of the British Medical Association. He is survived by his widow and a young son.

Universities and Colleges.

UNIVERSITY OF LONDON.

PROFESSOR A. V. HILL, Sc.D., F.R.S., who, as already announced, succeeds Dr. E. A. Starling in the Jodrell chair of physiology at University College, was educated at Blundell's School and Cambridge (Trinity College). He was third wrangler in 1907, and in 1909 took a first class in physiology in the second part of the Natural Science Tripos. He was University lecturer in physical chemistry from 1914 to 1919, and afterwards University lecturer in physiology. During the war he was director of the Anti-Aircraft Experimental Section of the Munitions Inventions Department and a member of the Inventions Committee. Since 1919 he has been professor of physiology in the University of Manchester.

The chair of physiology, King's College, is declared vacant; the salary is £800 a year. Applications, which must be received not later than May 19th, should be sent to the Academic Registrar, University of London, South Kensington, S.W.7.

The Senate will hold a reception for the sixth triennial congress of the Société Internationale de Chirurgie, which is to meet in London in July next.

The presentation for degrees will be held at the Royal Albert Hall, Kensington Gore, on Thursday, May 3rd, at 2.30 p.m. A programme of music will be provided by the Trinity College of Music.

UNIVERSITY OF LIVERPOOL.

THE following candidates have been approved at the examinations indicated:

FINAL M.B. AND CH.B.—*Part I (Pathology)*: C. P. Allen, A. Ashworth, P. D. Barling, T. Bellis, E. C. Penn, T. A. Clarke, H. A. Cole, R. Cotter, E. A. R. Evans, M. Fisher, F. F. Fuller, G. A. Garrett, M. Godwin, W. J. Griffiths, L. F. Henry, F. C. S. Hinsbeeck, S. Howard, Enid M. Hughes, Bertha H. Irvine, R. C. Jones, E. Miles, D. H. Mills, J. R. Oddy, A. Oserovi z, E. R. S. Owen, P. Strelitz, A. C. Terry-Thompson, J. J. du Toit, B. J. van de S. de Villiers. *Part II (Public Health, Forensic Medicine, Toxicology)*: J. M. Brodrick, G. E. Church, R. Y. Dawbarn, J. C. D ummond, Clara M. V. Gleave, D. C. G. Hanlon, W. F. Jones, T. S. King, W. J. Laird, C. Sharp, N. Weinberg.

D.P.H.—Doris M. Cassady, E. R. Peirce, G. H. Potter.

DIPLOMA IN TROPICAL MEDICINE.—D. Basu, J. C. Cruickshank, Winifred I. Doherty, J. Elsobn, R. N. Raja, C. F. White.

Dr. J. C. Cruickshank has been recommended for the Alan H. Milne Medal.

UNIVERSITY OF ABERDEEN.

THE spring graduation ceremony took place in the Mitchell Hall, Marischal College, on March 28th.

Among the recipients of the honorary degree of LL.D. were Sir George Makins, G.C.M.G., C.B., consulting surgeon to St. Thomas's Hospital, and Dr. William Mackie, Fellow and past vice-president of the Edinburgh Geological Society and a medical practitioner of Elgin.

The following were the principal prize winners in the Faculty of Medicine:

Fife Jamieson Memorial Gold Medal in Anatomy: W. Marshall. Keith Gold Medal for Systematic and Clinical Surgery: A. Lyall. Shepherd Memorial Gold Medal for "The Principles and Practice of Surgery": R. R. Trail. Dr. James Anderson Gold Medal and Prize in Clinical Medicine, etc.: A. Lyall. Matthews Duncan Gold Medal in Obstetrics: W. Gunn. Alexander Ogston Prize in Surgery: W. J. Ogilvie.

CONJOINT BOARD IN ENGLAND.

THE Committee of Management of the Examining Board in England of the Royal Colleges of Physicians and Surgeons has prepared a revised synopsis of the examination in pharmacology, practical pharmacy and materia medica, drawn up by the examiners. It will come into force at the examination in October next.

The Maudsley Hospital has been added to the list of hospitals recognized for instruction in mental diseases for the diploma in psychological medicine. It has also been decided that a candidate in Part II of the examination for this diploma who acquits himself well in either neurology or psychological medicine, but fails to pass in the other subject, may at the discretion of the examiners be allowed to present himself for re-examination only in the subject in which he failed. The regulations have been altered also so as to allow the appointment at an institution for mental diseases to be a whole-time appointment; hitherto the appointment must have been a resident one. The Manchester Eye Hospital has been added to the list of hospitals recognized for the diploma in ophthalmological medicine and surgery, and the Calcutta School of Tropical Medicine and Hygiene for six months' course of instruction for the diploma in tropical medicine and hygiene.

Egyptian Medical School.

The examinations of the Egyptian Medical School and Hospital, Cairo, have been inspected by Mr. H. J. Waring, and on his report the Committee of Management has felt justified in recommending that the examinations and course of education should continue to be recognized by the Royal Colleges for another year. The Committee, however, proposes to make some recommendations to the Minister of Education of the Egyptian Government based on Mr. Waring's observations. The suggestions relate to the extension of the period of instruction in chemistry, physics, and biology with the subject of English, the cataloguing of the pathological museum, the creation of additional house appointments, the provision of additional facilities for clinical pathological investigations, and the general administration of the Medical School. The Egyptian Government has expressed an intention to institute courses of instruction and examinations in the medical school conducted in Arabic, to be supplemented by courses given by the English professors in English. It is considered that the effect of this change will be to create two standards: (*a*) the course of study and examination in Arabic, and (*b*) a higher course of instruction and examination in English.

The Committee expressed the unanimous opinion that the Royal Colleges should definitely lay it down that the continued recognition of the school will be dependent upon instruction in all subjects of the curriculum being given in English concurrently with or supplementary to the instruction in Arabic, that the examinations to be recognized by the Royal Colleges shall be conducted in English only, and that courses of study and examinations in Arabic alone will not be given any recognition whatever.

The Committee's recommendations were approved.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

SURGERY.—K. C. Chock, M. K. El Khadem, M. A. Lawson, M. Mo. W. Lopez.

MEDICINE.—M. A. Lawson.

FORENSIC MEDICINE.—G. K. Butterworth, M. Hawke, C. M. John, M. A. Lawson.

MIDWIFERY.—G. K. Butterworth, K. C. Chock, M. Hawke, H. Hirst, M. A. Lawson, H. M. White.

The diploma of the Society has been granted to Messrs. G. K. Butterworth, K. C. Chock, H. Hirst, M. A. Lawson, and H. M. White.

The Services.

ROYAL NAVY MEDICAL CLUB.

THE annual dinner will be held at the Trocadero Restaurant, Piccadilly Circus, W.1. on Thursday, April 19th, at 7.30 p.m. for 8 p.m. Members who wish to be present are asked to inform the Honorary Secretary, Royal Navy Medical Club, 68, Victoria Street, S.W.1, not later than seven clear days before that date.

Medical News.

THE April course of museum demonstrations at the Royal College of Surgeons of England will commence on Friday, April 13th, at 5 p.m., when Sir Arthur Keith will demonstrate madder stained specimens illustrating the process of bone growth. On Monday, April 16th, at the same hour, Professor Shattock will give a demonstration of specimens illustrating repairs of fractures. The demonstrations, which are open to advanced students and medical practitioners, will be continued on Mondays and Fridays up till and including April 30th.

A COURSE (the sixth) of lectures and practical courses of instruction for a diploma of psychological medicine has been arranged at the Maudsley Hospital, Denmark Hill, S.E. The first part will begin on Tuesday, May 1st, at 2.30 p.m., when Sir Frederick Mott will give the first of eight lectures on the anatomy of the nervous system. Dr. Henry Devine will begin a course of eight lectures on psychology on Thursday, May 3rd, and Dr. Golla a course on the physiology of the nervous system on May 4th. The courses will be followed by practical instruction and demonstrations. The second part of the course will begin in October next. The fee for the two courses is 15 guineas, for each course separately 10 guineas. Further particulars can be obtained on application to the cashier, London County Council, County Hall, Westminster Bridge, S.E.1.

A COURSE of lectures for medical practitioners on mental deficiency, supplemented by a course of clinical instruction, will be held from May 28th to June 2nd, under the auspices of the University of London Extension Board in co-operation with the Central Association for Mental Welfare. The course is intended more especially for those medical practitioners who are engaged as certifying officers to local authorities under the Mental Deficiency Act, 1913, as school medical officers or medical officers of institutions, or who are otherwise definitely concerned with mental defectives. The course will be based on the requirements of the syllabus for the University of London Diploma in Psychological Medicine, and the university will grant a certificate of attendance to those who attend the whole course. The fee is three guineas, and full particulars may be obtained from Miss Evelyn Fox, University Extension Department, University of London, South Kensington, S.W.7.

THE *Yorkshire Evening News* states that two gifts, each of £150,000, have been made to a fund for cancer research, for which an appeal is about to be issued. The sum to be asked for, it is stated, is two million sterling.

A SPECIAL post-graduate course of instruction in the work of school clinics and in diseases of children intended for school medical officers and others will begin at the London Hospital Medical College on Tuesday, May 1st. The fee for the course, which extends for three months, is 15 guineas. Further particulars can be obtained on application to the dean, Professor William Wright, London Hospital Medical College, Mile End, E.

ACCORDING to a Reuter's telegram from Stockholm the Swedish Government has authorized the Telegraph Board to transmit gratuitously to ships at sea of all nationalities medical advice from two Gothenburg hospitals, which is to be given free of cost. Requests for advice are to be made to the coast station at Gothenburg.

A SPECIAL penal meeting and the ordinary monthly meeting of the Central Midwives Board for England and Wales were held on March 22nd, Sir Francis Champneys presiding. It was announced that Dr. Griffiths and Dr. Jervis had been re-elected on the Board by the Royal College of Surgeons of England and the Association of Municipal Corporations respectively. The list of examiners submitted by the secretary was approved for the ensuing year.

MESSRS. WM. HEINEMANN (MEDICAL BOOKS), LTD. (20, Bedford Street, London, W.C.2), announce that for the future, commencing with Volume IV (May, 1923), they will publish the *Journal of Neurology and Psychopathology*.

DR. CHARLES H. PHILLIPS, for thirty-seven years medical consultant to the Bucknall Infectious Diseases Hospital Committee, has on the occasion of his retirement been presented by the committee officials and staff of the hospital with a microscope suitably inscribed. The Mayor and Corporation of Stoke-on-Trent have also presented him with an illuminated address.

AN experiment of some interest is being made by ladies who have established a Samovar Invalid Kitchen at 47, Upper Baker Street, N.W.1. The idea is to supply cooked foods suitable for invalids and special diets that may be ordered by the medical attendant. It is proposed to deliver within a radius of two miles.

SIR DAVID BRUCE, K.C.B., F.R.C.P., F.R.S., has been nominated by the Council as President of the British Association at its meeting next year in Toronto.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 5, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

THE TASTE OF POTASSIUM BROMIDE.

WE have received an inquiry as to the best method of disguising the taste of potassium bromide, especially when it is given to children, but it is not easy to give a satisfactory reply. According to Martindale's *Extra Pharmacopoeia*, syrup of ginger, liquid extract of glycerin, or preparations of rose or vanilla are among the best. Special flavouring preparations of glycerin to which the name of glyl and syl respectively are given are advised; a glyl flavoured with rose, or a syl flavoured with vanilla. The preparations mentioned amount to solutions of essential oils in glycerin or syrup respectively. In response to an inquiry as to whether he had anything to add to what is published in his book, Dr. W. H. Martindale mentions bitter orange and peppermint. Potassium bromide must not, of course, be take in solid form, but it has been administered mixed with sodium chloride as a table salt to be taken with meals.

INCOME TAX.

"E. C. T." inquires whether English people resident abroad for six months or more are allowed any remission.

*** Temporary absence from the country is dealt with in No. 3 of the General Rules (Income Tax Act, 1918), which provides that a British subject whose ordinary residence has been in the United Kingdom shall be charged to tax as a person residing in the United Kingdom if his absence is for the purpose only of occasional residence abroad. What "E. C. T." has in mind probably is the exemption of the *foreign* resident who comes to this country for a temporary purpose only, and does not stay six months in any one financial year.

Allowable Expenses.

"D. McC."—The basis of assessment being the average profits of the practice during the past three years, what is required is a statement of the receipts and classified expenses for each of those years. Where the house used professionally is owned by the practitioner the amount to be treated as an expense is a reasonable proportion (for example, one-half) of the sum at which the rental value is assessed to Income Tax, Schedule A. The ground rent cannot be deducted in such a case, as it is included in the assessment.

Car Transactions.

"W. P. H. M." bought a second-hand car in 1913 for £200 (original cost about £450, and at present, new, about £550) and sold it in July, 1922, buying a 12-h.-p. at £595. The amount of the value renewed is $£200 \times \frac{550}{450} = £245$, and the claim must be restricted to that sum less £45 received—that is, to £200 net.

"J. C. G." bought in 1916 a 16 h.p. four-seater for £255, and during the last financial year a 12-h.p. four-seater for £395; the first car was then sold for £29. What its present cost would be is unknown. If it may be assumed for this purpose that the present cost of a 16-h.p. would not be less than £395, "J. C. G." is entitled to his actual out-of-pocket expenditure—that is, £395 − £29 = £366—as an expense of the "last financial year."

LETTERS, NOTES, ETC.

PUERPERAL INFECTION.

DR. C. J. HILL AITKEN (Kilnhurst, near Rotherham) writes: If any general practitioner on reading Professor Watson's article on treatment of puerperal infections (BRITISH MEDICAL JOURNAL, March 24th, p. 565) sighs and says, "It is too good to be true," I would refer him for confirmation to Shear's *Obstetrics, Normal and Operative* (second edition, 1920), page 704, paragraph 11: "The present tendency, and one with which I cordially sympathize, is to recognize that the majority of the cases of puerperal infection are self-limited and have a natural tendency to recovery, that surgical operations and intrauterine manipulations are seldom indicated, as a rule do more harm than good, and are to be undertaken only upon clear and definite indications."

A DISCLAIMER.

DR. JAMES SMITH (Schawfield, Falkirk) writes: Dr. J. B. Simpson of Golspie informs me that quite recently a man called upon him soliciting orders for a new work called *Modern Chemistry*, and calling himself Dr. James Smith of Falkirk. As the only registered practitioner of that name in this town I desire to say that I have not been north of Aberdeen for many years and have not canvassed for book orders at any time.

A CORRECTION.

DR. C. E. S. FLEMMING calls attention to a mistake in his letter on hospital policy in the JOURNAL of March 31st (p. 574). In the first line of the letter, for "Dr. Fothergill" read "Dr. Garratt."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 36 and 37.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *108*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page) ...	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.